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INTRODUCTION.

This REVIEW is based on reports for February, 1891, from 2,302 regular and voluntary observers. These reports are classified as follows: 172 reports from Signal Service stations; 118 reports from United States Army post surgeons; 1,466 monthly reports from state weather service and voluntary observers; 31 reports from Canadian stations; 181 reports through the Central Pacific Railway Company; 334 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Ser-

vice;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Meteorological Report of Missouri State Board of Agriculture, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR FEBRUARY, 1891.

The month was warmer than the average February east of a line traced from Lake Superior to west Texas; to the westward of this line the month was colder than usual. The greatest departure above the average temperature occurred from the lower lake region to the North Carolina coast, where it exceeded 5°, and the most marked departure below the average temperature was noted on the northeast slope of the Rocky Mountains, where it was more than 10°. At Jacksonville, Fla., the month was the warmest, and at Valentine, Nebr., and San Carlos, Ariz., it was the coldest February on record. The highest maximum temperature reported by a regular station of the Signal Service was 97°, at Rio Grande City, Tex., and by a voluntary observer, 99°, at Fort Ringgold, Tex. At a number of stations in the south Atlantic and Gulf states, and at Keokuk, Iowa, and Escanaba, Mich., the maximum temperature was as high or higher than previously reported for February. The lowest minimum temperature reported by a regular station of the Signal Service was -36°, at Fort Custer, Mont., and by voluntary observers, -46°, at Breckenridge and Gunnison, Colo. At Fort Stanton and Santa Fé, N. Mex., and San Diego, Cal., the minimum temperature was the lowest ever reported for February. The cold weather of the 26th and 27th in the Gulf and south Atlantic states injured early fruit and vegetables.

More than double the usual amount of precipitation fell on the middle and south Pacific coasts and over the southern plateau region; in the Missouri Valley, the Ohio Valley and Tennessee, the lower lake region, and the middle Atlantic states the monthly precipitation was about one-half greater, and over the northern plateau, on the northeast slope of the Rocky Mountains, in the upper lake region, and in New England it was about one-fourth greater than the February average. In the lower Rio Grande valley, on the middle-eastern slope of the Rocky Mountains, and at Key West, Fla., less than one-half the usual amount of precipitation fell, and in the west Gulf and south Atlantic states and on the southeast slope of the Rocky Mountains one-half to three-fourths of the average amount for February was reported. In southeast Massachusetts, at Albany, N. Y., and at stations in North Carolina, Georgia, Tennessee, Louisiana, Minnesota, South Dakota, New Mexico,

Arizona, Montana, Colorado, and Oregon the monthly precipitation was the heaviest, and in northeast Florida, and at stations in Arkansas, Texas, Indian Territory, and northwest Washington it was the least ever reported for February. Snowfall of more than 100 inches was reported at Rico, Colo., and Alta, Utah; more than forty inches fell at stations in central New York, south-central and north-central Oregon, and extreme northwest Wyoming, and more than thirty inches fell in northeast Nevada, north-central New Mexico; central Wisconsin, and south Vermont. The heavy rainfall in Louisiana, Tennessee, and the east Gulf states caused serious interruption to farm work. The general and heavy rains of the middle of the month in California ended a serious and long-continued drought in that region.

Destructive floods occurred in Arizona, California, and along the Ohio River and tributaries. Owing to heavy rains the Gila and Colorado rivers and tributaries began to rise on the 15th, the rise reaching Yuma, Ariz., on the 19th. The night of the 21st the water was within four feet of the top of the levee built on the south side of the town to protect it from the overflow of the backwater of the Gila River. The evening of the 22d the levee broke and by 9 p. m. one-half of the town was in ruins. On the 26th, at 8 p. m., the water was above the scale on the gauge at Yuma, and the embankment, which had been repaired, again gave way. On the 27th the water reached 33.2 feet at Yuma, 4 feet 8 inches higher than ever before recorded at that place, and it was probably about 4 inches higher during the night. The loss of private property in Yuma by the flood was estimated at over \$300,000. No trains had arrived or departed from the 22d to the close of the month. The destruction by flood was also very great throughout Arizona and southern California, and freshets occurred in the Sacramento Valley.

On the 1st the Ohio River was rising rapidly at Cincinnati, Ohio, and on the 6th reached 47.9 feet, 2.9 feet above the danger-line, and then commenced to fall. On the 13th and 16th the river again passed the danger-line at Cincinnati. On the 17th the rivers passed the danger-line at Pittsburgh, and at 11 p. m. the Monongahela River stood at 29.9 feet, 7.9 feet above the danger-line. Portions of Allegheny City were flooded and travel on the street railroad between Pittsburgh

and Allegheny City was suspended. On this date the river rose 11 feet at Parkersburgh, W. Va. On the 18th the river reached 31.3 feet at Pittsburgh, after which it fell. In the Allegheny River the water reached 32 feet on the 7th street bridge in the early morning; with the exception of the stage reached February 6, 1884, this was the highest stage ever recorded at that place. Streets in low-lying parts of Pittsburgh and Allegheny City were flooded. On the 20th the river reached 44 feet 10 inches at Parkersburgh, W. Va., at midnight, the highest stage noted in 60 years, save in February, 1884, when 54 feet 2 inches was reached. On the 22d 54.8 feet was reached at Cincinnati, and parts of Cincinnati and Newport, Ky., were flooded. At Louisville, Ky., the river was 1.6 foot above the danger-line. On the 23d the river reached 56 feet at Cincinnati, and many houses were abandoned in submerged districts. Immense damage had been caused, and large areas continued under water along the Ohio River and tributaries. At Louisville the river reached 27.7 feet. On the 25th the river was 57.4 feet and stationary at Cincinnati, and the water had risen 16 feet in 6 days. On the 26th the stage of the water at Louisville was 32.3 feet, and the river was falling at Cincinnati.

The Tennessee River reached a dangerous stage at Chattanooga, Tenn., on the 10th, and was rising rapidly at Knoxville. On the 12th portions of Chattanooga were flooded; the river was 2.5 feet above the danger-line, and considerable of the surrounding country was flooded. On the 14th the river reached 37.55 feet at Chattanooga, and then began to fall. Another rise occurred at Chattanooga from the 22d to 25th. On the 15th the Cumberland River rose above the danger-line at Nashville, Tenn., reaching 41.2 feet. On this date a rise in the Sacramento River flooded a part of Red Bluff, Cal., and caused damage in Butte county. On the 16th about one-half of Johnstown, Pa., was flooded by a rise in the Conemaugh River. On the 17th there was a flood in the west branch of the Susquehanna River. On the 20th the Susquehanna River was 2 feet above the danger-line at Harrisburg, Pa., and had

risen 5 feet during the preceding night, causing much damage. On the 26th floods occurred along the Hudson River and in streams in central and east New York. On the 13th the Mississippi River reached the danger-line, 40 feet, at Cairo, flooding bottom lands. On the 22d the river reached a dangerous stage at Natchez, Miss. On the 23d the Mississippi River was dangerously high from Memphis, Tenn., southward. On the 24th the lower Mississippi was at or near the danger-line at several points. On the 25th the river was 44.3 feet and rising at Cairo. On the 26th the water reached the danger-line, 33 feet, at Memphis, Tenn., and was 1.9 foot above the danger-line at New Orleans, La. At the close of the month the river was 5.5 feet above the danger-line and rising slowly at Cairo; it stood at the danger-line at Memphis, and was 2.2 feet above the danger-line at Vicksburg, Miss.

Tornadoes were reported as follows: Helena, Ark., 9th; damage \$5,000. Troy, Mo., 24th; damage \$2,000. Utica, Ind., about midnight 24-25th; damage \$6,000. Severe local storms were reported at Soapstone Mount, N. C., on the 11th; at Cape Girardeau, Mo., on the 20th; at Sunbury, N. C., on the 22d, damage \$4,000, and one child killed; at Berkeley, Cal., on the 23d; at Newcastle, Ky., on the 24th, damage \$2,000; and at Abilene, Tex., on the 25th. Heavy thunder-storms occurred at Eureka, Cal., on the 16th; at San Antonio, Tex., on the 20th; at West Bend and Manson, Iowa, on the 24th; at Louisville, Ky., the night of the 24-25th; and in southeast Massachusetts on the 28th.

Navigation was resumed on the lower Connecticut River on the 11th. The Hudson River was open from Newburgh to New York City on the 25th. At Iowa and upper Illinois ports the Mississippi River opened and closed at intervals during the month. On the 9th auroras were observed in Indiana, Iowa, Minnesota, South Dakota, and Wisconsin; on the 11th in Illinois, South Dakota, Wisconsin, Michigan, Massachusetts, New Hampshire, and Maine; on the 12th in Maine, Massachusetts, Michigan, and Montana; and on the 14th in Illinois, Michigan, Massachusetts, New Hampshire, and Maine.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for February, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars. The departure of the mean pressure for February, 1891, obtained from observations taken twice daily at the hours named, from that determined from hourly observations, varied at the stations named below, as follows:

Station.	Departure.	Station.	Departure.
New Orleans, La.....	+ .001	Pittsburgh, Pa.....	+ .014
Memphis, Tenn.....	+ .002	Washington City.....	+ .015
Eastport, Me.....	+ .002	Lynchburg, Va.....	+ .015
Saint Louis, Mo.....	+ .003	Saint Paul, Minn.....	- .001
Duluth, Minn.....	+ .005	Moorhead, Minn.....	- .002
Albany, N. Y.....	+ .006	Bismarck, N. Dak.....	- .002
Nashville, Tenn.....	+ .007	Omaha, Nebr.....	- .003
Key West, Fla.....	+ .008	Galveston, Tex.....	- .006
Cleveland, Ohio.....	+ .008	Santa Fe, N. Mex.....	- .008
Wilmington, N. C.....	+ .008	Salt Lake City, Utah.....	- .010
Chicago, Ill.....	+ .009	Abilene, Tex.....	- .011
Atlanta, Ga.....	+ .009	Fort Assiniboine, Mont.....	- .012
New York City.....	+ .010	Portland, Oregon.....	- .014
Boston, Mass.....	+ .012	San Francisco, Cal.....	- .016
Jacksonville, Fla.....	+ .013	El Paso, Tex.....	- .016

The mean pressure was highest along the south Atlantic coast, where it was above 30.15, and it was above 30.10 in the British Possessions north of east Montana. The mean pressure was lowest in west Washington, where it was below 29.85, and it was below 29.95 in a small area which extended over the east-central part of the middle plateau region, over the west part of the middle plateau region, and on the Pacific coast north of the 40th parallel. On the Pacific coast north of the 34th parallel, in the plateau region, except over the

southeast part, generally over the upper lake region, and in the lower Saint Lawrence valley, New Brunswick, and east Nova Scotia the mean pressure was below 30.00.

On the Pacific coast north of the 34th parallel and over the west parts of the middle and northern plateau regions the mean pressure was the lowest reported for February since 1878, and during the storm of the 22-23d the barometer readings were the lowest ever reported for February at a number of stations on the middle and south Pacific coasts.

A comparison of the pressure chart for February, 1891, with that of the preceding month shows that there was a general decrease in mean pressure, except along the Atlantic coast north of Georgia and in the British Possessions north of Montana and North Dakota. The greatest decrease in mean pressure occurred over north-central Nevada, where it was more than .40, and the decrease was more than .20 over the middle and northern plateau regions and on the middle and north Pacific coasts. At stations on the immediate middle Atlantic, south New England, and Nova Scotia coasts, and in the British Possessions north of Montana the increase in mean pressure was more than .05. The remarkable decrease in mean pressure over the middle and northern plateau regions and on the middle and north Pacific coasts was largely due to the exceptionally low barometer which attended the storm of the 21st-24th.

The mean pressure was below the normal over the entire country, save at a number of stations on the immediate Atlantic coast north of Georgia, where it was slightly above the normal. The most marked departure below the normal was noted on the north Pacific coast, where it exceeded .20, and

the mean pressure was more than .10 below the normal on the middle Pacific coast, over the middle and northern plateau regions, and on the northeast slope of the Rocky Mountains.

The monthly barometric ranges at regular stations of the Signal Service are shown in the table of Signal Service data on the last two pages of the REVIEW.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.			Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.										
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.	Station.			Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.		
High areas.		°	°	°	°	Days.	Miles.			Inch.			°						
I.....	1	54	112	40	73	4-0	32	Chatham, N. B.....	.54	4	Dodge City, Kans.....	34	2	Wood's Holl, Mass.....	nw.	48	4		
II.....	7	54	118	40	73	5-0	41	Fort Custer, Mont.....	.66	7	Omaha, Neb.....	35	8	Fort McKinney, Wyo.....	n.	64	7		
III.....	12	54	117	31	73	4-0	30	Helena, Mont.....	.48	12	Fort Assiniboine, Mont.	24	13	Kitty Hawk, N. C.....	ne.	64	15		
IV.....	14	55	117	47	67	6-0	24	Eastport, Me.....	.56	19	Rapid City, S. Dak.....	40	15	Chicago, Ill.....	sw.	46	18		
V.....	20	55	120	42	65	4-5	30	Anticosti Island, G. S. L.	.78	23	Fort Buford, N. Dak.....	28	20	Kitty Hawk, N. C.....	nw.	52	22		
VI.....	24	53	116	41	98	4-0	20	Yarmouth, N. S.....	.76	27	Kansas City, Mo.....	45	24	Abilene, Tex.....	n.	52	25		
Mean.....						4-6	30		.63			34				54			
Low areas.										Fall.			Rise.						
I.....	1	43	123	34	94	1-5	52	Chatham, N. B.....	1.06	3	Sydney, C. B. I.....	39	3	Winnemucca, Nev.....	sw.	46	1		
II.....	2	44	86	45	57	1-5	44	Louisville, Ky.....	.40	7	Rockliffe, Ont.....	25	7	Block Island, R. I.....	sw.	46	3		
III.....	5	52	104	35	71	2-5	36	Yarmouth, N. S.....	.92	10	Columbus, Ohio.....	21	9	Block Island, R. I.....	e.	36	7		
IV.....	8	53	115	26	95	3-5	31	Calgary, N. W. T.....	.52	11	Medicine Hat, N. W. T....	25	11	Sioux City, Iowa.....	ne.	48	8		
V.....	11	55	127	46	108	1-0	40	Father Point, Quebec....	.72	16	Albany, N. Y.....	31	15	Montreal, Quebec.....	e.	48	10		
VI.....	12	48	130	38	106	4-0	18	Chatham, N. B.....	.54	21	Louisville, Ky.....	32	20	Fort Canby, Wash.....	se.	48	11		
V.....	14	47	111	50	55	2-5	48	Sault de Ste. Marie, Mich.	.58	24	La Crosse, Wis.....	30	23	Fort Canby, Wash.....	sw.	56	12		
Vb.....	16	38	96	59	59	2-5	38	Eastport, Me.....	.28	27	Halifax, N. S.....	8	27	Winnemucca, Nev.....	s.	56	16		
VI.....	18	32	118	52	69	4-5	30	Block Island, R. I.....	.30	28	Quebec, Quebec.....	16	28	Erie, Pa.....	w.	46	37		
VII.....	21	44	130	34	100	6-0	15		.59			25				50			
VIIa.....	24	43	93	59	65	2-0	33												
VIII.....	25	32	85	44	66	1-5	41												
IX.....	27	43	84	46	73	1-0	37												
Mean.....						2-6	34												

AREAS OF HIGH PRESSURE.

Six areas of high pressure were observed during the month, all of which reached the Atlantic coast within the limits of the United States. They were first observed in the region north of Montana or British Columbia, and the general direction of their movement was to the south over the Rocky Mountain regions, and thence eastward to the Atlantic, inclining slightly to the north of east after reaching the Mississippi Valley. Only two areas of high passed eastward north of the Lake region, and in each case secondary areas formed within the limits of the United States and united with the principal area while the latter was central over the Saint Lawrence Valley.

The following is a general description of each area of high pressure observed, based upon regular daily telegraphic reports:

I.—This area of high pressure had appeared in the extreme northwest in the latter part of January, and at the opening of the month it covered the Missouri Valley and the regions to the northward, the barometric pressure being greatest at Calgary, N. W. T., where it was 30.84, and the temperature -38° . At Battleford, N. W. T., the temperature was -44° , and at Qu' Appelle, N. W. T., -42° , the pressure being above 30.60. During the movement of this area to the southward it apparently separated, one portion passing to the west of the Rocky Mountains over Idaho, and the other passing eastward over Manitoba, this being the condition observed on the morning of the 2d; but by the morning of the 3d these areas had united, forming a well-defined area of high pressure central over Colorado, from which region it passed directly eastward, covering the entire country east of the Rocky Mountains during the 4th, and the Atlantic coast on the 5th, when it disappeared to the eastward. The cold wave attending this area of high pressure extended from the Lake region to the Gulf of Mexico, the fall in temperature exceeding 30° in twenty-four hours over large areas of the east Gulf and middle Atlantic states and the Ohio Valley. This cold wave was also severe over the Maritime Provinces, where the fall in temperature ranged from 20° to 34° in twenty-four hours on the 5th, and a temperature of -24° occurred at Chatham, N. B., on the morning of the 5th.

II.—Appeared over British Columbia on the 7th and passed eastward toward Manitoba during the 8th, on which date a secondary area formed over the northern plateau region. The

a. m. report of the 9th exhibited two areas of high pressure, one to the northeast of Manitoba, from which apparently a secondary had passed over the Saint Lawrence Valley, and a second area covering the greater portion of the Rocky Mountain regions, the pressure being greatest over Utah. The telegraphic reports received during the night showed a general drift of the mountain area of high pressure to the southeast. It covered the southwest on the morning of the 10th, having been preceded by a dry norther in Texas. After reaching Texas the direction of movement changed to the north of east, and it passed over the eastern portion of the United States during the 11th and 12th, attended by clearing and fair weather, but not unusually low temperature. It was last located as central on the 40th parallel near Martha's Vineyard, Mass.

III.—This area of high pressure was observed north of Montana on the 12th, while on the afternoon of the 11th a second area was forming over the southern plateau region. The high of the north had moved eastward rapidly north of the Lake region, while the southern area was apparently retarded and remained in the central Rocky Mountain region until the afternoon of the 13th, when it had reached the upper Mississippi valley. The following report indicated that these two areas had united north of the lower lake region, forming a barometric condition, the southern half of which covered the eastern half of the United States. After the union of these two areas of high pressure the direction of movement changed to the southward, and the area passed over the middle Atlantic states and off the south Atlantic coast, the barometric pressure decreasing with the southerly movement. On the morning of the 16th it was central near the 30th parallel on the meridian of Washington City.

IV.—Was first observed in Alberta on the morning of the 14th. It passed slowly southeastward over the Rocky Mountain regions, but during this movement it was not well defined and developed but slight energy. After reaching the northern boundary of Wyoming it passed rapidly to the southeast, attended by increasing pressure at the centre, and on the morning of the 18th it covered the country lying between the Alleghany and the Rocky Mountains, the centre being located in southern Iowa, where the northeasterly movement of this area commenced. This area passed over the Lake region on the 19th and over New England and the Maritime Provinces on

the 20th, the barometric pressure continuing to increase until the centre reached the coast line.

V.—Was observed in northeast British Columbia on the morning of the 20th, when areas of low pressure were observed in the upper Mississippi valley and on the north Pacific coast. This area passed eastward to Manitoba by the morning of the 22d, when the telegraphic reports showed an extension to the southward, a large volume of cold air having covered the eastern slope of the Rocky Mountains as far southward as Texas. The principal area of high pressure remained central over Manitoba, while the secondary had formed over the central valleys central near Cairo, Ill. These areas apparently moved eastward and united in northern New York on the morning of the 23d and disappeared to the east of New England during the 24th.

VI.—Appeared in the region north of Idaho on the 24th and remained almost stationary in that region until the 27th, when a southeasterly movement set in which carried the centre of this area to the lower Missouri valley by the morning of the 28th, and at the close of the month it had reached the upper Mississippi valley, apparently moving toward the Lake region.

AREAS OF LOW PRESSURE.

Nine areas of low pressure have been traced on the weather charts for February, and in addition to these, three secondary or short-lived disturbances were observed in the Rocky Mountain districts, the latter disappearing to the west of the Mississippi Valley, unattended by marked weather changes. Of the nine principal areas observed, five appeared first on the Pacific coast, four to the north of San Francisco, Cal., and one near San Diego, Cal. These disturbances were all traced to the east of the Rocky Mountains. Seven areas of low pressure passed eastward over the Mississippi Valley north of Cairo, Ill., the centre of disturbance generally reaching the Saint Lawrence Valley well to the north; one disturbance developed in the south Atlantic states and passed northeastward over Nova Scotia. The direction of movement was slightly to the north of east while the disturbances were passing over the territory to the east of the 100th meridian, the inclination to the north being greater in the areas of the lower latitudes. The direction of movement to the west of the Rocky Mountains was slightly to the south of east, with two exceptions, viz., low area No. III, which moved almost directly south from Montana, and No. VI, which moved directly northeast from California to Lake Superior.

The following is a description of the weather conditions observed during the transit of each area of low pressure:

I.—This disturbance covered the north Pacific coast at the opening of the month, and on the afternoon of the 1st it was apparently central near Salt Lake City, Utah, attended by snows at the northern Rocky Mountain stations and in the Missouri Valley. It passed southeastward over Colorado, reaching northern Texas on the morning of the 2d, after which two depressions were formed in the trough of low pressure which bounded the east quadrants of the high area which then covered the Rocky Mountain regions. One of these low areas passed southeastward to the lower Mississippi valley, where it filled up, and the other developed considerable energy over the Lake region and passed northeastward, attended by severe gales, and rain changing to snow throughout the northern states east of the Mississippi river on the 3d. This storm continued to increase in force as it approached the coast, attaining its maximum energy while central over Maine on the afternoon of the 3d, when the barometer at Eastport was 29.08. Gales extended along the coast to Hatteras, N. C., on the 3d, and continued at northeast stations on the 4th. After passing to the northeast of New England the storm apparently increased in size, attended by general increase of pressure at the centre of disturbance.

II.—Was observed in the upper Rio Grande valley on the 5th, and moved northeastward to the lower Ohio valley, where it was central on the morning of the 7th, reports showing a well-defined depression, attended by very heavy rains in the

Southern States and light rains as far north as the 40th parallel. The pressure decreased about .40 of an inch during the passage of this area from New Mexico to the Ohio Valley. The subsequent movement northeastward showed an increase of pressure at the centre of disturbance, and it apparently disappeared by increase of pressure after reaching the middle Atlantic coast.

III.—This storm developed in the region north of Montana, where it was first observed on the 5th, having been preceded in that region by a secondary disturbance which moved slowly eastward during the 3d and 4th and disappeared while central over Manitoba on the 5th. Low area No. III moved southward over the Rocky Mountain regions in advance of a cold wave, and after reaching northern Texas on the afternoon of the 7th three disturbances were formed in the barometric trough which bounded the southeast quadrant of the advancing high area. One of these secondary disturbances followed the Rio Grande Valley and disappeared over the west Gulf on the 9th; the second moved eastward over the west Gulf states and disappeared over the Mississippi Valley on the 9th; while the third developed in the lower Missouri valley and moved northeastward over the Lake region and the Saint Lawrence Valley during the 8th and 9th, disappearing to the east of the Maritime Provinces on the 10th. This disturbance was by far the most decided of the three, and it moved eastward with increasing energy, and did not attain its maximum force until reaching Nova Scotia. The pressure diminished during its easterly movement from 29.80 when it first developed in the Missouri Valley to 29.26 at Sydney, C. B. I.

IV and V.—These disturbances apparently developed over the north Pacific. The first was observed north of Washington on the 11th, and after moving southeastward to Montana during the succeeding twenty-four hours it filled up, owing to the advance of a more decided disturbance which appeared on the north Pacific coast on the 12th. Previous to the development of these storms on the Pacific coast two minor depressions were observed in the Rocky Mountain regions, one passing from the region north of Montana almost directly southward to Colorado, where it disappeared on the 11th. The other disturbance originated in the Rio Grande Valley and after moving eastward over Texas disappeared by increase of pressure in the lower Mississippi valley on the 12th. Low area No. V was central over the north Pacific some distance from the coast line on the afternoon of the 12th, when southerly gales were reported north of California. The disturbance apparently advanced to the southeast, covering the coast and plateau regions, while the centre remained to the northwest of Washington until the morning of the 14th, when a secondary developed over western Montana. This secondary moved eastward north of the Lake region, reaching Lake Superior on the 15th and the lower Saint Lawrence valley on the 16th. The original disturbance moved first southward to Nevada, attended by heavy rains in northern California. After reaching northern Nevada on the 15th it passed eastward over Utah and western Colorado, where it disappeared, but another secondary formed over eastern Kansas on the morning of the 16th and passed northeastward over the Lake region, attended by general rains east of the Mississippi and snow in the northern districts. This secondary covered the Lake region on the afternoon of the 17th, and was central in the lower Saint Lawrence valley on the morning of the 18th as a storm of marked energy, westerly gales being reported from the Lake region. The westerly gales extended eastward over the New England coast and the Maritime Provinces during the 18th, following the centre of disturbance which passed to the east of the coast line on that date.

VI.—Was first observed in southern California on the 18th. It moved slowly over the southern plateau region, reaching Colorado on the 19th, after which it moved rapidly to the northeast, reaching Lake Superior on the afternoon of the 20th, and finally disappearing to the north of the Saint Lawrence on the 22d. This storm was attended by general rains

in all districts, the rainfall amounting to almost an inch in southern California and Arizona. The rainfall was also heavy in the Mississippi Valley when the storm was central over Lake Superior.

VII.—Appeared on the Pacific coast on the 21st, attended by general rains on the coast and snow over the plateau regions. This storm continued during the 22d, the rainfall being very heavy, and the southerly gales unusually severe, causing considerable damage to shipping along the northern California and Oregon coasts. On the afternoon of the 22d the storm-centre had passed to the east of the coast line near southern Oregon, when the wind shifted to northerly, attended by snow over Washington as far west as the coast. This disturbance passed over the central plateau region to Colorado, where it was central on the afternoon of the 23d, when it included within its limits the entire region west of the Mississippi, the barometer being 29.20 near the centre. Rain continued on the Pacific coast and rain or snow in the Rocky Mountain regions and the Northwest. On the morning of the 24th a secondary disturbance formed over Iowa, while the principal low area remained central over Colorado. The secondary moved northeastward over the lakes with increasing energy, and was followed by a cold wave in the central valleys, which

separated the two depressions, the secondary moving eastward with decreasing pressure at the centre, while the primary remained stationary over Colorado, the pressure increasing at the centre with the advance of the area of high pressure until the 27th, when it moved southward to northern Texas, where it filled up.

VIII.—This storm developed in the southern extremity of the barometric trough which attended the preceding storm. It was first observed as central in northern Georgia on the 25th and moved northeastward, following the coast line, reaching North Carolina on the morning of the 26th and the south New England coast on the afternoon of that date. The westerly winds following this storm were severe over the Gulf and on the south Atlantic coast on the 26th. The storm apparently increased in force as it passed to the east of and along the New England coast during the 27th.

IX.—This disturbance formed in the upper lake region on the 27th and probably resulted as a secondary disturbance forming in the barometric trough which attended the disturbance described as No. VII. When the latter was central over northern Texas a slight depression existed over Michigan, which moved northeastward to the Saint Lawrence Valley, being central near Montreal, Quebec, at the close of the month.

NORTH ATLANTIC STORMS FOR FEBRUARY, 1891 (pressure in inches and millimetres; wind-force by Beaufort scale).

The paths of the storms that appeared over the west part of the north Atlantic Ocean during February, 1891, are shown on Chart I. These paths have been determined from international observations by captains of ocean steamships and sailing vessels received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

Storms of marked severity were not reported on the north Atlantic Ocean during the month. Over and near the British Isles high barometric pressure continued during the first and second decades of the month, and after the 20th there were four dates, the 22d, 25th, 26th, and 28th, when the pressure fell below 30.00 (762) in Great Britain and Ireland. The high pressure over the eastern part of the ocean deflected the storms of western origin northward, and until the latter part of the month the centres passed north of the trans-Atlantic steamship routes before reaching the 25th meridian. Over the western part of the ocean storms of moderate strength advanced from the American continent at close intervals.

On the 1st a storm moved eastward over the Canadian Maritime Provinces and the Gulf of Saint Lawrence. On the 2d this storm was central on the northeast edge of the Banks of Newfoundland, with pressure below 29.30 (744) and fresh to strong gales, and by the 3d the storm-centre had advanced over mid-ocean north of the region of observation. On the 1st a storm of considerable strength, which had advanced from Newfoundland, was central over mid-ocean in high latitudes, after which it disappeared in the direction of Iceland. On the morning of the 4th a storm which had moved from the Saint Lawrence Valley was central over the northeast part of the Gulf of Saint Lawrence, with pressure below 29.30 (744), after which it passed northeastward beyond the region of observation. On the 6th a storm was central over mid-ocean in high latitudes. On the 7th and 8th a storm was central south and southeast of Nova Scotia, and by the 9th this storm had moved northeastward over the Banks of Newfoundland, with pressure about 29.40 (747) and fresh to strong gales, after which it moved northeastward and disappeared north of the region of observation after the 10th. On the morning of the 10th a storm was central over Maine, whence it moved northeast of Newfoundland by the 11th, with pressure below 29.20 (742) and fresh gales. By the 12th this storm had moved eastward to the 40th meridian, thence to about the 35th meridian by the 13th, and to the 30th meridian by the 14th, after which it

probably recurved westward and united with a storm which had advanced from south of Newfoundland.

On the 16th a storm moved eastward from the Saint Lawrence Valley over the Gulf of Saint Lawrence and on the morning of the 17th it was central northeast of the Grand Banks, whence it moved slowly eastward to about the 35th meridian by the 18th, after which it disappeared north of the region of observation. On the morning of the 17th a storm was central south of Nova Scotia, after which its course cannot be traced. On the morning of the 18th a storm of considerable strength, with pressure below 29.30 (744), was central in the Saint Lawrence Valley, and by the morning of the 19th this storm was central northeast of Newfoundland. Moving slowly eastward the storm-centre reached the 25th meridian by the 22d, after which it apparently recurved northward. During the night of the 18-19th a heavy snow storm prevailed at Saint John's, N. F. On the morning of the 19th the wind veered from south to northwest, blowing hard and driving to sea the ice which had closed the harbor for several days. This was the first storm of the month which advanced to the 25th meridian as far south as the trans-Atlantic steamship routes. On the 21st and 22d a storm moved eastward over the Saint Lawrence Valley and the Gulf of Saint Lawrence, and by the 23d had passed northeast of Newfoundland, with pressure below 29.20 (742). By the 24th the storm-centre had reached the 30th meridian, and on the 25th it was apparently southwest of Ireland, in which region its presence was indicated by reports of the 26th. This was the only storm of the month whose path can be traced over the ocean from coast to coast. On the 23d a northeast gale set in at Bermuda, with rain and high barometer, 30.30 (770). The storm continued until the 25th, with wind veering to east and southeast, and on the night of the 24th went to southwest, and on the 25th changed to west. Lowest barometer, 29.98 (761). On the morning of the 26th low pressure prevailed along the entire Atlantic coast of the United States and Canada, and on the morning of the 27th a storm of considerable strength, with pressure below 29.10 (739), was central over west Nova Scotia, whence it apparently moved rapidly northeastward and disappeared north of the region of observation by the 28th.

FOG IN FEBRUARY.

The limits of fog-belts west of the 40th meridian, as determined from reports of shipmasters, are shown on Chart I by dotted shading. East of the 55th meridian fog was reported

on 3 dates; between the 55th and 65th meridians on 7 dates; and west of the 65th meridian on 2 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog near the Grand Banks in February, 1891, numbered 11 less than the average; between the 55th and 65th meridians 1 more than the average; and west of the 65th meridian 4 less than the average. On the dates fog was reported east of the 55th meridian general storms were central in the Gulf of Saint Lawrence. On the dates fog was reported west of the 55th meridian it occurred with the approach or passage to the northward of general storms. Dense fog was reported at points along the New England, New York, and New Jersey coasts on the 1st, 3d, 6th to 9th, 16th to 18th, 20th to 22d, 25th, and 26th, with the approach or passage to the northward of storms whose influence extended off the coast.

OCEAN ICE IN FEBRUARY.

Ice was reported more than 1° north and about 1½° west of the average southern and eastern limits of Arctic ice for February. The southernmost ice was floe ice, in the position given, on the 22d. The easternmost ice reported was a large iceberg, in the position given, on the 5th. In February, 1888 and 1889, no icebergs were reported near Newfoundland and the Grand Banks. In each of the years named field ice was

reported over and near the Grand Banks, and in 1889 Gulf ice was encountered south of Newfoundland. On the 5th, 8th, 14th, 15th, 18th, and 22d of the current month Gulf ice was reported between Cape Breton Island and Newfoundland.

The ice reported for February, 1891, was deficient when compared with the average quantity reported for the corresponding month of the last eight years.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for February during the last 9 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
February, 1883	42 01	52 46	February, 1883	46 10	45 44
February, 1884	42 00	50 00	February, 1884	46 50	43 45
February, 1885	41 50	51 12	February, 1885	47 52	42 00
February, 1886	46 10	47 15	February, 1886	48 00	44 47
February, 1887	40 00	48 00	February, 1887	46 26	41 50
February, 1888	44 59	45 06	February, 1888	44 59	45 06
February, 1889	45 35	48 00	February, 1889	45 35	48 00
February, 1890	41 12	50 12	February, 1890	44 30	35 30
February, 1891	44 20	48 00	February, 1891	44 33	44 59
Average	43 07	48 57	Average	46 07	43 31

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for February, 1891, is exhibited on Chart II by dotted isotherms. In the table of Signal Service data the monthly mean temperature and the departure from the normal are given for regular stations of the Signal Service. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Signal Service represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over south Florida, where it was above 70, and it was above 60 in south Georgia, and along the east and west Gulf coasts. The mean temperature was lowest in extreme north Minnesota, North Dakota, and northeast Montana, where it was below 0 (zero), and in the British Possessions north of east Montana it was below -10. The mean temperature was 10 or below from Minnesota westward over Montana, in the lower Saint Lawrence valley, in north Ontario, in the north part of the upper lake region, and at elevated stations in central Colorado, and it was below 30 in New England, save in southeast and extreme south parts, and north of a line traced thence south of west to southeast Colorado, thence southward to central New Mexico, thence northwestward to east California in about latitude north 38°, and thence northward over Oregon and Washington.

The mean temperature was above the normal east of a line traced from Lake Superior southwestward to extreme west Texas; to the west of this line the mean temperature was below the normal. The greatest departure above the normal temperature occurred from the lower lake region to the North Carolina coast, where it was more than 5, and the most marked departure below the normal temperature was noted on the northeast slope of the Rocky Mountains, where it exceeded 10. The mean temperature was below the normal at Father Point, Quebec, and at Cape Breton Island.

A severe cold wave swept over the Dakotas and Minnesota on the 2d. On the 8th a severe cold wave extended over south Wyoming, east Colorado, and Nebraska. The mornings of the 9th and 10th were the coldest ever known for the season

in southwest Texas, New Mexico, and southwest Colorado. At the following-named stations the temperature was the lowest ever reported for the first decade of February: Montrose, Colo., -12, 16 below; Santa Fé, N. Mex., -6, 3 below; Fort Grant, Ariz., 14, 5 below; El Paso, Tex., 18, 2 below; Fort Stanton, N. Mex., 6, 7 below; San Antonio, Tex., 26, 1 below; and Corpus Christi, Tex., 34, 1 below. The morning of the 10th the temperature was 20 below the normal over the greater part of east Texas. On the 17th the weather was the warmest on record for the season in Maryland, the District of Columbia, the west parts of Virginia and the Carolinas, and in north Georgia. At the following-named stations the maximum temperature was higher than previously reported for the second decade of February: Baltimore, Md., 74, 2 above; Washington City, 74, 1 above; Lynchburgh, Va., 74, 1 above; Raleigh, N. C., 76, 5 above; Chattanooga, Tenn., 76, 2 above; and Atlanta, Ga., 76, 1 above. During the 17th and 18th the temperature was more than 20 above the normal in the districts named, and the morning of the 18th it was 34 above at Washington City. A cold wave extended over the east and west Gulf states on the 26th and 27th. In north Florida the morning of the 27th was one of the coldest on record for the season, the minimum temperature at Jacksonville, 30, being 2 lower than previously recorded for the latter part of February. Extremely cold weather also prevailed in northwest Montana, where the minimum was -34 at Fort Assiniboine, which was 12 lower than any previous record for the season of the year.

The seasonal temperature, January and February, 1891, averaged about as follows: In the middle and south Atlantic and New England states the temperature continued above the normal, and the seasonal departure was 2 to 3. The temperature also continued above the normal in the west Gulf states, the Rio Grande Valley, the Ohio Valley and Tennessee, and the Lake region, the seasonal departure being 4 to 5 in the Ohio Valley and Tennessee and the Lake region. In the extreme northwest, where the mean temperature for January was 20 above the normal, the mean for February was nearly 3 below the normal, and the seasonal departure was about 8 above the normal. The temperature continued above the normal in the upper Mississippi valley, where the seasonal departure was nearly 5. In the Missouri Valley and on the northeast and middle-eastern slopes of the Rocky Mountains the excess

in January gave way to a deficiency in temperature in February. On the southeast slope of the Rocky Mountains the temperature continued above the normal, and the seasonal departure was about 2. Over the southern and middle plateau regions the temperature continued below the normal, and the seasonal departure was about 3. Over the northern plateau region and on the Pacific coast the excess in temperature for January gave way to a deficiency in February. The seasonal temperature continued in excess over the northern plateau and on the north Pacific coasts, and it was less than 1 below the normal on the middle and south Pacific coasts.

At Jacksonville, Fla., the highest mean temperature ever noted for February was recorded in 1891, when the mean was nearly 6 above the normal, and nearly 1 higher than the highest mean temperature previously reported for February, noted in 1890. In the middle and south Atlantic and south New England states, in the interior of the east Gulf states, generally in Louisiana, and on the west Gulf coast the warmest February occurred in 1890, when the mean temperature was 5 to 7 above the normal in south New England, 5 to 8 above in the middle and south Atlantic and the interior of the east Gulf states, 5 above in north Louisiana, and 5 to 6 above on the west Gulf coast; over the northern plateau in 1888, when the mean temperature was 6 to 13 above the normal; on the middle Gulf coast in 1887, when the mean temperature was 5 to 7 above the normal; on the middle and south Pacific coasts in 1886, when the mean temperature was 3 to 5 above the normal; on the north Pacific coast in 1885, when the mean temperature was about 6 above the normal; from the east part of the Lake region southwestward over the Ohio, middle Mississippi, and lower Missouri valleys to east-central Texas, and in the lower Rio Grande valley in 1882, when the mean temperature was 8 to 12 above the normal in the Lake region, 7 to 12 above in the Ohio, middle Mississippi, and lower Missouri valleys, Indian Territory, and east Texas, and 5 above in the lower Rio Grande valley; in north Wisconsin and upper Michigan in 1878, when the mean temperature was 14 to 18 above the normal; and in the middle Missouri valley, Minnesota, and on the Maine coast in 1877, when the mean temperature was 14 to 19 above the normal in the middle Missouri valley and Minnesota, and 5 to 8 above on the Maine coast.

At Valentine, Nebr., and San Carlos, Ariz., 6 years record, the current month was the coldest February on record, the mean temperature being 10 below the normal at Valentine and 8 below at San Carlos. Along the south part of the south Atlantic coast the coldest February occurred in 1889, when the mean temperature was 6 to 8 below the normal; on the middle and north Pacific coasts, and from the north Pacific coast to the Dakotas, in 1887, when the mean temperature was 5 to 6 below the normal on the middle Pacific coast, 7 to 9 below on the north Pacific coast, about 11 below over the northern plateau, and 14 to 19 below in Montana and the west part of the Dakotas; from the Rocky Mountain slope eastward, south of the 40th parallel, to the Atlantic coast (save along the south part of the south Atlantic coast), and in New York and south New England in 1885, when the mean temperature was 7 to 13 below the normal in the middle Atlantic states, 7 to 9 below in the north part of the south Atlantic states, 10 to 14 below in the Ohio Valley, 6 to 12 below in the middle and lower Mississippi valleys, and 5 to 10 below in the Gulf states; in the Red River of the North Valley in 1884, when the mean temperature was 7 to 9 below the normal; in north Utah and Wyoming and thence to west Nebraska and west Kansas in 1883, when the mean temperature was 5 to 11 below the normal; from the south Pacific coast over the southern plateau in 1882, when the mean temperature was 4 to 10 below the normal; and from the middle Missouri valley eastward over the Lake region and north New England in 1875, when the mean temperature was 10 to 17 below the normal in the Missouri Valley, 12 to 16 below in the upper Mississippi valley and the Lake region, and 4 to 5 below in Maine.

In 1887, when the mean temperature was the highest ever

noted for February on the middle Gulf coast, it was the lowest ever recorded for that month on the middle and north Pacific coasts, over the northern plateau, and on the northeast slope of the Rocky Mountains. In 1882, when the February mean was the highest noted for that month from the east part of the Lake region southwestward to east-central Texas, the month was the coldest February on record on the south Pacific coast and over the southern plateau region.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for February for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for February, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for February, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Feb.	(2) Length of record.	(3) Mean for Feb., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for Feb.			
						Highest.	Year.	Lowest.	Year.
<i>Arkansas.</i>			<i>Years</i>						
Lead Hill	Boone	39.9	9	41.4	+ 1.5	49.9	1882	32.2	1885
<i>California.</i>									
Sacramento	Sacramento	50.1	35	43.6	- 6.5	55.0	1877, '79	43.3	1890
<i>Connecticut.</i>									
Middletown	Middlesex	26.8	23	31.5	+ 4.7	34.5	1867	17.7	1885
<i>Florida.</i>									
Merritt's Island	Brevard	65.9	9	68.8	+ 2.9	72.6	1883	58.0	1889
<i>Georgia.</i>									
Forsyth	Monroe	52.1	17	56.9	+ 4.8	59.6	1890	44.5	1885
<i>Illinois.</i>									
Peoria	Peoria	39.4	35	31.8	+ 2.4	39.3	1882	15.5	1875
Riley	McHenry	22.3	35	25.1	+ 2.8	32.4	1882	4.7	1875
<i>Indiana.</i>									
Vevay	Switzerland	36.0	24	40.5	+ 4.5	45.5	1882	25.1	1885
<i>Iowa.</i>									
Cresco	Howard	15.6	19	12.6	- 3.0	31.3	1878	1.0	1875
Monticello	Jones	21.5	38	21.6	+ 0.1	34.6	1878	7.5	1875
Logan	Harrison	24.1	17	18.7	- 5.4	35.2	1877	12.6	1875
<i>Kansas.</i>									
Lawrence	Douglas	32.0	27	29.4	- 2.6	41.6	1882	20.8	1885
Wellington	Sumner	32.4	12	34.7	+ 2.3	40.1	1882	24.6	1885
<i>Louisiana.</i>									
Grand Coteau	Saint Landry	59.0	8	61.8	+ 2.8	64.6	1887	52.4	1885
<i>Maine.</i>									
Orono	Penobscot	18.8	21	22.2	+ 3.4	25.0	1877	13.3	1885
<i>Maryland.</i>									
Cumberland	Allegany	31.2	32	38.0	+ 6.8	40.0	1890	19.4	1868
<i>Massachusetts.</i>									
Amherst	Hampshire	24.8	55	29.4	+ 4.6	32.4	1890	16.5	1843
Newburyport	Essex	26.8	11	30.8	+ 4.0	31.3	1890	19.3	1885
Somerset	Bristol	28.1	18	34.7	+ 6.6	35.3	1890	19.6	1885
<i>Michigan.</i>									
Kalamazoo	Kalamazoo	25.6	15	31.2	+ 5.6	35.0	1882	11.2	1885
Thornville	Lapeer	24.5	14	29.8	+ 5.3	34.8	1882	10.6	1885
<i>Minnesota.</i>									
Minneapolis	Hennepin	14.1	26	10.8	- 3.3	29.9	1877	- 2.6	1875
<i>Montana.</i>									
Fort Shaw	Lewis & Clarke	25.1	21	7.8	- 17.3	39.6	1877	2.4	1887
<i>New Hampshire.</i>									
Hanover	Grafton	18.6	54	23.7	+ 5.1	27.2	1840	10.8	1885
<i>New Jersey.</i>									
Moorestown	Burlington	31.4	27	38.0	+ 6.6	39.4	1890	21.6	1885
South Orange	Essex	29.8	20	35.1	+ 5.3	37.0	1890	22.8	1885
<i>New York.</i>									
Cooperstown	Otsego	21.1	37	25.9	+ 4.8	31.7	1857	10.5	1885
Palermo	Oswego	21.7	37	27.4	+ 5.7	27.8	1859	9.8	1885
<i>North Carolina.</i>									
Lenoir	Caldwell	40.2	18	45.2	+ 5.0	49.0	1890	30.3	1875
<i>Ohio.</i>									
N'th Lewisburgh	Champaign	30.2	59	35.3	+ 5.1	42.0	1851	19.0	*
Wauseon	Fulton	25.6	21	31.0	+ 5.4	35.4	1882	11.3	1875
<i>Oregon.</i>									
Albany	Linn	40.6	12	37.2	- 3.4	47.9	1885	32.7	1887
Eola	Polk	39.8	20	35.7	- 4.1	46.5	1885	31.0	1887
<i>Pennsylvania.</i>									
Dyberry	Wayne	22.3	26	27.1	+ 4.8	30.1	1890	13.3	1868
Grampian Hills	Clearfield	24.8	26	30.5	+ 5.7	33.8	1890	13.7	1885
Wellsborough	Tioga	26.5	11	29.8	+ 3.3	34.0	1890	16.7	1885
<i>South Carolina.</i>									
Statesburgh	Sumter	50.0	10	54.4	+ 4.4	56.6	1890	41.8	1885
<i>Tennessee.</i>									
Austin	Wilson	43.2	22	46.5	+ 3.3	51.4	1890	32.9	1885
<i>Texas.</i>									
New Ulm	Austin	56.4	17	57.5	+ 1.1	62.0	1882	52.6	1883
<i>Vermont.</i>									
Strafford	Orange	18.2	17	22.4	+ 4.2	25.7	1877	11.0	1885
<i>Virginia.</i>									
Birdsneest	Northampton	41.2	22	47.1	+ 5.9	50.2	1890	33.9	1889
<i>Washington.</i>									
Fort Townsend	Jefferson	40.4	19	33.7	- 6.7	47.0	1885	31.7	1887
<i>Wisconsin.</i>									
Madison	Dane	20.8	24	21.9	+ 1.1	32.8	1878	8.1	1885

* 1838, 1856, and 1875.

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperature reported by a regular station of the Signal Service was 97, at Rio Grande City, Tex., on the 24th. The maximum temperature was above 80 along the south part of the south Atlantic coast, in southeast Alabama, and in the west Gulf states, and was above 70 south of the Ohio and lower Missouri rivers, on the southeast slope of the Rocky Mountains, and in south California and southwest Arizona. The lowest maximum temperature was reported along the northern border of the country between the 95th and 119th meridians. The reports of United States Army post surgeons and voluntary observers show the following maximum temperatures in states and territories where temperature rising to or above 80 was reported: Fort Ringgold, Tex., 99; Eustis, Fla., 91; Vaiden, Miss., 86; Fort Sill, Okla. T., Florence, Ariz., and Cheneyville, La., 85; Volcano Springs, Cal., Louisville, Ga., and Fort Supply, Ind. T., 84; Jacksonborough, S. C., Richmond, Va., and Central City, Ky., 83; Citronelle, Ala., 82; Marshallberg, N. C., 81; and Englewood, Kans., 80. At the following-named stations of the Signal Service the maximum temperature was as high or higher than previously reported for February: Charleston, S. C., 80, the same as 1887; Savannah, Ga., 84, 3 above 1889; Jacksonville, Fla., 86, 2 above 1887; Atlanta, Ga., 78, 3 above 1889; Montgomery, Ala., 83, 2 above 1883; Galveston, Tex., 75, the same as 2 or more years; Rio Grande City, Tex., 97, 1 above 1887; Palestine, Tex., 82, the same as 1886; Shreveport, La., 81, the same as 1889; Fort Sill, Okla. T., 85, 6 above 1879; Little Rock, Ark., 78, the same as 2 or more years; Fort Smith, Ark., 80, 2 above 1883; Keokuk, Iowa, 70, 1 above 1882; and Escanaba, Mich., 41, the same as 2 or more years.

The lowest temperature reported by a regular station of the Signal Service was -36, at Fort Custer, Mont., on the 2d. The minimum temperature was below -30 over northwest Minnesota, north North Dakota, and east and central Montana, and was below zero over north New England, northeast New York, and north of a line traced from lower Michigan irregularly southwestward to south New Mexico, and thence irregularly northwestward to north Idaho. The minimum temperature was highest over extreme south Florida, where it was above 55, and it was 40 or above in extreme south Louisiana, at the mouth of the Rio Grande River, and at San Francisco, Cal. The reports of United States Army post surgeons and voluntary observers show the following minimum temperatures in the states and territories where temperature falling to or below zero was reported: Breckenridge and Gunnison, Colo., -46; Pine River, Minn., -44; Rhinelander, Wis., -40; Wahpeton, N. Dak., -39; Powder River, Mont., -35; Henry's Lake, Idaho, -34; Fort Meade, S. Dak., -32; Cresco, Iowa,

and Fort Brady, Mich., -31; Fort Niobrara, Nebr., -30; West Milan, N. H., -28; Fairfield, Me., and Fort Fetterman, Wyo., -25; Halleck, Nev., -23; Monero, N. Mex., -22; Mount Pleasant and Nephi, Utah, -19; Chelsea and Saxton's River, Vt., -17; Turin, N. Y., -16; Truckee (2), Cal., -15; Cockrell and Lanark, Ill., and Pickering, Mo., -13; Heath, Mass., and La Fayette, Ind., -12; Seneca, Kans., -10; Dyerberry, Pa., -7; Waterville, Wash., -6; Canton and New Hartford (1), Conn., -5; Lakeview, Oregon, -4; Garrettsville and Granville, Ohio, -2; Cooley's, Ariz., -1; Caddo, Ky., 0. At the following-named stations of the Signal Service the minimum temperature was as low or lower than previously reported for February: Fort Stanton, N. Mex., -3, 7 below 1884; Santa Fé, N. Mex., -6, 3 below 1880; and San Diego, Cal., 34, 1 below 1880.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart IV by a line traced just inside the coast line at Hatteras, N. C., a line traced over north Florida, and a line traced just inside the west Gulf coast line. The western limit of freezing weather is shown by a line traced from Yuma, Ariz., northward inside the Pacific coast line to the 40th parallel.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature are given in the table of Signal Service data. The greatest monthly ranges of temperature occurred along the northeast and middle-eastern slopes of the Rocky Mountains, where they exceeded 75, whence they decreased eastward to less than 45 on the southeast New England coast, southeast to less than 30 in extreme south Florida, to less than 45 on the middle Gulf coast, and to less than 50 on the west Gulf coast, westward to less than 25 on the middle Pacific coast, and to less than 20 on the north Pacific coast.

FROST.

Frost was not reported as far south as in the preceding month. In January frost was noted in Florida as far south as Lee county on a number of dates, while for the current month no frost was reported in Florida south of the 29th parallel. In Texas it occurred in the lower Rio Grande valley in January, while in February it was not reported south of the 29th parallel. On the Pacific coast frost occurred as far south as San Diego, Cal., in January, while for the current month it was noted about 1° farther north. In the Gulf States and north Florida the cold weather of the 26th and 27th injured early fruit and vegetables, and at points in the east Gulf and south Atlantic states the temperature on the morning of the 27th was the lowest of the season.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for February, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of Signal Service data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

Monthly precipitation to exceed 10.00 was reported along the Pacific coast between the 39th and 45th parallels, in the interior of California between the 38th and 40th parallels, in Santa Cruz Co., Cal., and in San Diego Co., Cal., east and north of San Diego. In parts of California and Arizona the rainfall was remarkably heavy. In the extreme northwest part of California the precipitation exceeded 20.00; at Boulder Creek, Santa

Cruz Co., 34.03 was reported; and at Cuyamaca, San Diego Co., a depth of 32.20 was reported. The monthly precipitation also exceeded 10.00 in Yavapai Co., central Arizona, at Alta, Salt Lake Co., Utah, and in southeast Louisiana, central, northeast, and extreme south Mississippi, east-central and northwest Alabama, extreme north Georgia, extreme west North Carolina, and east Tennessee. At a number of stations in west Texas and east Colorado no precipitation was reported. The monthly precipitation was generally less than 0.50 in the Rio Grande Valley and on the east slope of the Rocky Mountains, and was less than 1.00 in areas between the 95th meridian and the Rocky Mountains, in northwest Ontario, and northeast and southwest Florida.

The precipitation was in excess of the February average on the Pacific coast south of the 45th parallel, over the northern, southern, and the west parts of the middle plateau regions, from the north part of the southern plateau northeastward to the upper lake region, thence southward over the middle and

upper Ohio valleys and the interior of the east Gulf states, in New England and the middle Atlantic states, and along the west Gulf coast; elsewhere the precipitation was deficient. The most marked departure above the normal precipitation occurred in northwest California and southwest Oregon, where it exceeded 6.00, and the monthly precipitation was more than 2.00 in excess on the Pacific coast south of the 43d parallel and over the greater part of Arizona. In east Tennessee and at Halifax, N. S., there was an excess of more than 4.00, and the excess exceeded 2.00 in an area extending from Lake Erie southward over the Ohio Valley and the interior of the east Gulf states, at New Orleans, La., and on the southeast New England and south New Jersey coasts. The greatest departure below the normal precipitation occurred on the extreme north Pacific coast, where it was more than 4.00, and the deficiency exceeded 2.00 in Arkansas, and at Charleston, S. C., and Jacksonville, Fla.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: middle Pacific coast, 250 per cent.; south Pacific coast, 227 per cent.; southern plateau, 219 per cent.; Missouri Valley, 160 per cent.; middle Atlantic states, 146 per cent.; lower lake region, 145 per cent.; Ohio Valley and Tennessee, 144 per cent.; east Gulf states, extreme northwest, and northeast slope of the Rocky Mountains, 130 per cent.; northern plateau, 129 per cent.; upper lake region, 128 per cent.; New England, 120 per cent.; and middle plateau region, 108 per cent. In districts where the precipitation was deficient the percentage of the normal was about as follows: Rio Grande Valley, 38 per cent.; middle-eastern slope of the Rocky Mountains, 40 per cent.; Key West, Fla., 42 per cent.; west Gulf states, 60 per cent.; south Atlantic states, 76 per cent.; southeast slope of the Rocky Mountains, 77 per cent.; upper Mississippi valley, 81 per cent.; and north Pacific coast, 91 per cent.

At the following-named stations the precipitation for the current month was the greatest ever reported for February during the respective periods of observation: Wood's Holl, Mass., 2.81 in excess of the normal, and 0.24 greater than the greatest amount previously reported for February, noted in 1876; Albany, N. Y., 1.59 in excess, and 0.02 greater than in 1878; Charlotte, N. C., 2.57 in excess, and 0.52 greater than in 1884; Forsyth, Ga., 3.75 in excess, and 0.21 greater than in 1882; Chattanooga, Tenn., 4.80 in excess, and 1.49 greater than in 1884; Grand Coteau, La., 5.49 in excess, and 0.98 greater than in 1888; Saint Vincent, Minn., 1.60 in excess, and 1.01 greater than in 1889; Huron, S. Dak., 0.83 in excess, and 0.21 greater than in 1887; Fort Stanton, N. Mex., 0.94 in excess, and 0.57 greater than in 1888; Santa Fé, N. Mex., 1.23 in excess, and 0.31 greater than in 1874; Fort Apache, Ariz., 3.20 in excess, and 0.75 greater than in 1884; Yuma, Ariz., 2.08 in excess, and 0.81 greater than in 1877; Helena, Mont., 1.02 in excess, and 0.35 greater than in 1884; Fort Shaw, Mont., 1.42 in excess, and 0.79 greater than in 1886; Montrose, Colo., 0.57 in excess, and 0.15 greater than in 1880; and Roseburgh, Oregon, 6.89 in excess, and 2.26 greater than in 1890. The greatest precipitation reported for February in the upper Ohio valley and at Lake Erie stations occurred in 1887, when it was 3 to 5 in excess of the normal; on the Washington coast in 1885, when the precipitation was 5 to 7 in excess; in the middle Ohio valley, Maine, from the New Jersey coast southwestward over central North Carolina, and on the south Pacific coast in 1884, when the precipitation was 4 to 5 in excess in the middle Ohio valley, 3 to 5 in excess in Maine, and in the area extending from New Jersey to North Carolina, and 6 to 10 in excess on the south Pacific coast; in the middle Mississippi and lower Ohio valleys in 1882, when the precipitation was 4 to 6 in excess; from the southeast slope of the Rocky Mountains northeastward to the upper Mississippi and Red River of the North valleys and the lower part of the upper lake region, and over the northern plateau and the west part of the middle plateau in 1881, when the precipitation was

1 to 3 in excess from the southeast slope of the Rocky Mountains to the Red River of the North Valley, 3 to 4 in excess in the lower part of the upper lake region, and 1 to 2 in excess over the northern plateau and the west part of the middle plateau; in the lower Rio Grande valley in 1873, when the precipitation was 1 to 6 in excess; and on the south Atlantic coast in 1874, when the precipitation was 3 to 6 in excess.

At the following-named stations the precipitation for the current month was the least ever reported for February: Jacksonville, Fla., 2.89 deficient, and 0.02 less than the least amount previously reported for February, noted in 1887; Fort Smith, Ark., 2.68 deficient, and 0.94 less than in 1885; Palestine, Tex., 1.94 deficient, and 0.55 less than in 1884; Fort Sill, Okla. T., 1.34 deficient, and 0.09 less than in 1879; and Neah Bay, Wash., 4.50 deficient, and 0.56 less than in 1887. The least precipitation reported for February occurred over the northern plateau and generally on the north Pacific coast in 1889, when the precipitation was 1 to 2 deficient over the northern plateau, and 3 to 6 deficient on the north Pacific coast; on the middle Pacific coast in 1886, when the precipitation was 3 to 5 deficient; on the south Pacific coast in 1885, when the precipitation was 2 to 4 deficient; in the lower Rio Grande valley in 1884, when the precipitation was 1 to 2 deficient; in south Arizona in 1881, when the precipitation was 0.50 to 1 deficient; and in the upper Mississippi valley and thence eastward over the Ohio Valley, the Lake region, and parts of the middle Atlantic and New England states in 1877, when the precipitation was 1 to 4 deficient in the upper Mississippi valley, 3 to 5 deficient in the Ohio Valley, 2 to 4 deficient in the Lake region, and 2 to 3 deficient in parts of the middle Atlantic and New England states.

In 1891, when the precipitation was the heaviest reported for February in extreme southeast Mass., east-central N. Y., south-central N. C., south-central Tenn., east-central S. Dak., extreme northwest Minn., in N. Mex., west Colo., Ariz., southwest Mont., and west-central Oregon, it was the least ever reported in extreme northeast Fla., east Tex., west Ark., Ind. T., and at Neah Bay, Wash. In 1885, when it was the greatest reported for the month on the Wash. coast, it was the least noted for February on the south Pacific coast. In 1884, when it was the greatest in the middle Ohio valley, Me., from N. J. southwest to N. C., and on the south Pacific coast, it was the least in the lower Rio Grande valley. In 1881, when it was the greatest from the southeast slope of the Rocky Mountains northeastward to the upper Mississippi and Red River of the North valleys, over the lower part of the upper lake region, and over the northern plateau and the west part of the middle plateau, it was the least in south Ariz. In 1877, when it was the greatest in the lower Rio Grande valley, it was the least from the upper Mississippi valley to the Atlantic coast.

The seasonal precipitation, January and February, 1891, averaged about as follows: In the middle Atlantic and New England states the precipitation continued above the normal, and the rainfall was about $\frac{1}{2}$ greater than usual. In the south Atlantic states and at Key West, Fla., the seasonal rainfall was $\frac{1}{2}$ to $\frac{3}{4}$ of the usual amount. In the east Gulf states the precipitation continued in excess, and the seasonal rainfall was more than $\frac{1}{10}$ greater than the normal. In the lower Rio Grande valley the excess in January gave way to a deficiency in February, and the seasonal rainfall was somewhat deficient. In the Ohio Valley and Tennessee and the lower lake region the deficiency in January gave way to an excess in February, and the seasonal rainfall was about $\frac{2}{10}$ greater than the normal in the Ohio Valley and Tennessee, and about $\frac{1}{10}$ greater in the lower lake region. In the upper lake region the precipitation continued in excess and the seasonal rainfall was more than $\frac{1}{10}$ greater than the normal. In the extreme northwest the deficiency in January was balanced by the excess in February, and the seasonal rainfall was normal. In the upper Mississippi valley the precipitation continued deficient, and the seasonal precipitation was about $\frac{1}{10}$ of the usual amount.

In the Missouri Valley and on the northeast slope of the Rocky Mountains the precipitation continued in excess, and the seasonal precipitation was about $\frac{1}{2}$ greater than the normal in the Missouri Valley, and about $\frac{1}{10}$ greater on the northeast slope of the Rocky Mountains. On the middle-eastern and southeast slopes of the Rocky Mountains the excess in January gave way to a deficiency in February, and the seasonal rainfall was about $\frac{1}{2}$ greater than the normal on the middle-eastern slope, and about $\frac{1}{3}$ greater on the southeast slope. Over the southern plateau the deficiency in January gave way to a marked excess in February, and the seasonal rainfall was about $\frac{2}{3}$ greater than usual. Over the middle and northern plateau the deficiency in January gave way to an excess in February, and the seasonal rainfall was about $\frac{1}{2}$ of the usual amount. On the north Pacific coast the deficiency continued, and the seasonal rainfall was about $\frac{2}{3}$ of the usual amount. On the middle and south Pacific coasts the very marked deficiency in January gave way to a large excess in February, and the seasonal rainfall was nearly $\frac{1}{2}$ greater than the normal on the middle Pacific coast, and nearly $\frac{2}{3}$ greater on the south Pacific coast.

DEVIATION'S FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for February for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for February, 1891; (4) the departure of the current month from the average; (5) and the extremes for February during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1891.	(4) Departure from average.	(5) Extremes for Feb.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		Inches	Years	Inches	Inches.	Inches.		Inches	
Lead Hill.....	Boone.....	5.14	9	1.60	-3.54	10.93	1884	1.47	1885
California.									
Sacramento.....	Sacramento..	2.78	41	7.62	+4.84	8.50	1854	0.12	1852
Connecticut.									
Middletown.....	Middlesex....	3.99	28	6.09	+2.10	7.56	1887	1.14	1877
Florida.									
Merritt's Island..	Brevard.....	2.81	13	1.25	-1.56	6.01	1888	0.15	1882
Georgia.									
Forsyth.....	Monroe.....	4.36	17	8.11	+3.75	8.11	1891	1.19	1879
Illinois.									
Peoria.....	Peoria.....	2.05	35	1.90	-0.15	5.45	1887	0.06	1877
Riley.....	McHenry.....	2.08	40	1.05	-0.43	6.00	1862, '65	0.03	1877
Indiana.									
Logansport.....	Cass.....	3.86	15	.....	.....	9.01	1857	0.15	1868
Vevay.....	Switzerland..	2.78	25	3.89	+1.11	10.23	1884	0.40	1877
Iowa.									
Cresco.....	Howard.....	0.96	19	1.49	+0.51	1.88	1887	0.07	1877
Monticello.....	Jones.....	1.87	35	0.80	-1.01	4.62	1887	0.32	1877
Logan.....	Harrison.....	1.35	23	1.60	+0.25	5.30	1881	1.	1889
Kansas.									
Lawrence.....	Douglas.....	1.25	25	1.98	+0.73	4.60	1881	0.03	1870
Wellington.....	Sumner.....	1.06	12	2.05	+0.99	3.73	1883	0.15	1879
Louisiana.									
Grand Coteau....	St. Landry..	2.93	8	8.42	+5.49	8.42	1891	1.37	1886
Maine.									
Orono.....	Penobscot....	4.16	21	2.93	-1.23	8.39	1876	1.30	1877
Maryland.									
Cumbarland.....	Allegany.....	2.56	18	3.99	+1.43	4.92	1882	0.60	1877
Massachusetts.									
Amherst.....	Hampshire....	3.16	56	4.07	+0.91	6.69	1853	0.36	1877
Newburyport....	Essex.....	4.50	11	4.83	+0.33	6.75	1880	2.30	1889
Somerset.....	Bristol.....	3.76	17	7.09	+3.33	8.70	1886	1.00	1877
Michigan.									
Kalamazoo.....	Kalamazoo....	2.64	15	3.35	+0.71	5.44	1881	0.12	1877
Thornville.....	Lapeer.....	2.04	14	3.94	+1.90	4.08	1884	0.00	1877
Minnesota.									
Minneapolis.....	Hennepin....	1.16	25	2.11	+0.95	3.80	1869	T.	1877
Montana.									
Fort Shaw.....	Lewis & Clarke	0.41	21	1.83	+1.42	1.83	1891	0.05	1877
New Hampshire.									
Hanover.....	Grafton.....	2.35	47	2.40	+0.05	7.67	1887	0.50	1865
New Jersey.									
Moorestown.....	Burlington....	3.47	27	5.28	+1.81	6.02	1886	0.53	1877
South Orange....	Essex.....	3.78	20	4.88	+1.10	6.10	1881	1.10	1877
New York.									
Cooperstown.....	Otsego.....	2.16	37	4.76	+2.60	5.21	1887	0.60	1886
Palermo.....	Caldwell.....	2.84	37	3.45	+0.61	7.20	1886	0.10	1877
North Carolina.									
Lenoir.....	Caldwell.....	4.27	19	6.60	+2.33	9.00	1873	0.60	1877
Ohio.									
N. Lewisburgh....	Champaign....	3.25	19	5.25	+2.00	8.20	1883	0.35	1872
Wauseon.....	Fulton.....	2.90	17	4.58	+1.68	7.19	1887	0.12	1877

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1891.	(4) Departure from average.	(5) Extremes for Feb.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Oregon.		Inches	Years	Inches	Inches.	Inches.		Inches	
Albany.....	Linn.....	6.43	13	7.73	+1.30	13.08	1881	0.95	1889
Eola.....	Polk.....	5.53	21	7.09	+1.56	13.24	1872	0.35	1889
Pennsylvania.									
Dyberry.....	Wayne.....	2.70	25	4.97	+2.27	5.50	1884	0.60	1877
Grampian Hills..	Clearfield....	3.46	19	7.01	+3.55	7.62	1887	1.56	1872
Wellsborough....	Tioga.....	5.87	11	3.46	-2.41	10.93	1884	0.95	1887
South Carolina.									
Statesburgh.....	Sumter.....	2.72	9	3.07	+0.35	5.47	1889	1.18	1883
Tennessee.									
Austin.....	Wilson.....	5.47	22	7.18	+1.71	12.57	1887	0.75	1868
Texas.									
New Ulm.....	Austin.....	4.36	18	3.10	-1.26	10.90	1882	1.06	1885
Vermont.									
Stratford.....	Orange.....	2.88	17	3.30	+0.42	5.90	1887	0.30	1877
Virginia.									
Birdsnest.....	Northampton	3.47	22	5.10	+1.63	6.55	1884	1.40	1877
Washington.									
Fort Townsend...	Jefferson....	1.82	16	2.31	+0.49	3.94	1879	0.37	1886
Wisconsin.									
Madison.....	Dane.....	1.73	26	1.38	-0.35	7.90	1869	0.30	1877

EXCESSIVE PRECIPITATION.

Monthly precipitation to equal or exceed 10.00 was reported at 41 stations in Cal.; at 9 stations in La.; at 6 stations in Ala. and Oregon; at 5 stations in Miss.; at 4 stations in Tenn.; at 3 stations in N. C.; at 2 stations in Ariz.; and at 1 station in Ga. and Utah. Among the heavier rainfalls reported were: 32.20, at Cuyamaca, Cal.; 34.03, at Boulder Creek, Cal.; and 20.20, at Highlands, N. C.

In the last 21 years precipitation to equal or exceed 10.00 has been reported in February for 12 years in Cal.; for 10 years in Wash. and Oregon; for 8 years in N. C., Tenn., and Tex.; for 6 years in Ala. and Ind.; for 5 years in Miss. and N. Y.; for 4 years in Fla. and Ga.; for 3 years in Ark., Conn., La., Ky., and Pa.; for 2 years in Ill., Mass., Ohio, R. I., and S. C.; and for 1 year in Kans., Mich., N. H., N. Mex., and Va. Among the heavier monthly rainfalls reported for this period are 22.85 at Cisco, and 20.70 at Summit, Cal., in 1887. Monthly precipitation to exceed 15.00 has been reported for 5 years in Cal.; for 3 years in Wash.; and for one year in Ga., Ind., La., N. Y., N. C., Oregon, S. C., Tenn., and Tex.

Precipitation to equal or exceed 2.50 in 24 hours was reported at 28 stations in Cal., and on 9 dates, the 14th to 18th and 21st to 24th; at 23 stations in La., and on 9 dates, the 1st, 11th to 16th, 19th, and 20th; at 9 stations in Ohio, and on 3 dates, the 15th to 17th; at 7 stations in Miss., and on 6 dates, the 2d, 6th, 7th, 12th, 13th, and 21st; at 5 stations in Ariz., and on 4 dates, the 17-18th, 22d, and 23d; at 7 stations in Tenn., and on 4 dates, the 3d, 8th, 9th, and 10th; at 4 stations in Ind. and Ill., on the 19-20th; at 4 stations in Ala., and on 6 dates, the 7th to 9th, 13th, 20th, and 21st; at 2 stations in Ga., and on 3 dates, the 7th, 20-21st; at 2 stations in Ky., and on 5 dates, the 1st, 8-9th, 20th, 21st; at 2 stations in Mich., and on 3 dates, the 17th and 19-20th; at 1 station in Colo., on the 19-20th; at 1 station in Ark., on the 1st; at 1 station in N. C., and on 3 dates, the 8-9th and 21st; at 1 station in Oregon, on the 12-13th; and at 1 station in Tex., on the 19-20th. Among the heavier rainfalls reported for this period were: 22.40, at Cuyamaca, Cal., 22-23d; 7.48 at Julian, Cal., 23d-24th; 6.65 at Oakland (1), Cal., 15th; 6.40 at Campo, Cal., 21st-22d; 6.10 at Vacaville (1), Cal., 14-15th; 7.55 at Maurepas, La., 15th; 6.24 at Luling, La., 13-14th; 6.45 at Farley's Camp, Ariz., 17-18th; 6.01 at Highlands, N. C., 8-9th; 5.82 at Mount Vernon Barracks, Ala., 13th; 5.26 at Athens (2), Ga., 7th; 5.00 at Kosciusko, Miss., 12-13th. At Stonewall Mine, Cal., 23.90 was reported from the 21st to 24th, inclusive, and at Emilie, La., 8.42 from the 12th to 14th.

In the last 21 years precipitation to equal or exceed 2.50 in 24 hours in February has been reported for 11 years in Ala. and Tex.; for 10 years in N. Y. and Tenn.; for 9 years in Ga.;

for 8 years in Ill.; for 7 years in Ark., Fla., La., and N. C.; for 5 years in Conn., Miss., Oregon, and Wash.; for 4 years in Ky., Ohio, and Pa.; for 3 years in Cal., Ind., Kans., Md., Mich., and Va.; for 2 years in Iowa, Me., Mass., and Mo.; and for 1 year in Ariz., the Dakotas, Del., N. J., R. I., S. C., and Wis. At Oneida, N. Y., 10.10 was reported on the 13th, 1874, and precipitation to equal or exceed 5.00 in 24 hours has been reported for 3 years in La. and Tenn.; and for 1 year in Cal., Conn., Miss., N. Y., Oregon, Tex., and Va.

Precipitation to equal or exceed 1.00 in 1 hour was reported at 2 stations in Tenn., and on 2 dates, the 3d and 9th; and at 1 station in Cal., on the 23d. At Cuyamaca, Cal., 7.00 was reported in 6 hours on the 23d. Remarkably heavy rainfall in 1 hour was not reported at regular stations of the Signal Service, and excessive rainfall for 5 and 10 minute periods is given in the table of "Maximum rainfall in one hour or less." In the last 21 years precipitation to equal or exceed 1.00 in one hour has been reported for 6 years in Tenn.; for 4 years in N. C.; for 3 years in Miss. and Tex.; for 2 years in Ala., Ark., and Cal.; and for one year in Fla., Ga., La., Mich., and Pa. Among the heavier rainfalls reported in one hour are: 1.93 in 30 minutes, at Louisville, Miss., 26th, 1890; 3.04 in 55 minutes, at Galveston, Tex., 27th, 1872; and 3.31, in 1 hour, at Galveston, Tex., 22d, 1888.

Table of excessive precipitation, February, 1891.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.						
Auburn.....	11.20	2.75	20, 21			
Bermuda.....		3.10	7			
Bessemer.....	10.10					
Double Springs.....	10.36					
Mountain Home.....	10.15					
Mount Vernon Barracks.....	13.73	5.82	13			
Do.....		3.32	21			
Talladega.....	10.13					
Valley Head.....		2.65	8, 9			
Arizona.						
Cooley's.....		2.51	17, 18			
Farley's Camp.....	11.15	6.45	17, 18			
Do.....		4.55	22, 23			
San Carlos.....		2.50	22, 23			
Teviston.....		2.50	23			
Tip Top.....	13.30	4.11	17, 18			
Do.....		4.59	22, 23			
Arkansas.						
Helena (1).....		2.50	1			
California.						
Alcatraz Island.....		3.31	14, 15			
Almaden.....	12.01					
Anderson.....	13.01					
Angel Island.....		3.00	15			
Aptos.....	13.16					
Benicia Barracks.....		2.55	16			
Berkeley.....	10.68	4.16	14, 15			
Boca.....	11.80					
Boulder Creek.....	34.03					
Calistoga.....	13.84					
Campo.....	12.50	6.40	21, 22			
Casco.....	11.88					
Colfax.....	14.60					
Crescent City.....	20.55	3.34	12			
Do.....		3.03	21			
Cuyamaca Dam.....	32.20	5.90	16	7.00	6 00	23
Do.....		3.20	18			
Do.....		22.40	22, 23			
Davisville.....	10.55					
Delta.....	13.70					
Espero.....	11.09					
Felton.....	21.69					
Fort Gaston.....	14.26					
Fort Mason.....		2.55	14, 15			
Georgetown.....	10.39					
Grass Valley.....	13.70	2.75	15			
Iowa Hill.....	10.52					
Jolon.....		3.82	23, 24			
Julian.....	19.32	4.43	16, 17			
Do.....		7.48	23, 24			
Laurel.....	28.95					
Los Angeles.....		2.75	15, 16			
Do.....		2.50	22, 23			
Los Gatos (1).....	16.65					
Los Gatos (2).....	17.50	5.12	14, 15			
Do.....		4.40	21, 22			
Mullans.....		2.95	15, 16			
Oakland (1).....	11.37	6.65	15			
Palermo.....	10.63	6.12	14, 15			
Presidio of San Francisco.....		4.30	14, 15			
Puente.....	12.05					

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
California—Continued.						
Red Bluff.....	10.68	3.80	14, 15			
Rumsey.....	13.60					
San Francisco.....		3.38	14, 15			
San Gabriel.....	11.26					
Santa Cruz (2).....	10.68					
Santa Margarita.....	10.96					
Santa Monica.....	11.61					
Santa Rosa.....	10.49					
Santa Rosa Ranch†.....	16.62	15.33	21-23			
Sims.....	18.20					
Sonoma.....	10.03	2.65	14, 15			
Stonewall Mine†.....		23.90	21-24			
Towles.....	14.65					
Upper Mattole.....	17.18	2.85	13			
Do.....		3.45	21			
Vacaville (1).....	12.93	6.10	14, 15			
Walnut Creek.....		3.97	15			
Willow (1).....		3.97	14, 15			
Winters.....	13.52					
Colorado.						
Fort Lewis.....		2.95	19, 20			
Rico.....	12.00					
Georgia.						
Athens (2).....	11.11	5.26	7			
Marietta.....		2.58	20, 21			
Illinois.						
Beason.....		3.50	19, 20			
Centralia.....		2.50	19, 20			
Flora.....		2.75	19, 20			
Griggsville.....		3.20	19, 20			
Indiana.						
Angola.....		2.50	19, 20			
Huntingburgh.....		3.00	20			
Indianapolis.....		2.86	19, 20			
Point Isabel.....		2.75	20			
Kentucky.						
Middleborough.....		2.73	8, 9			
Do.....		2.70	20, 21			
Paducah.....		2.50	1			
Louisiana.						
Abbeville.....		2.50	20			
Alexandria.....	11.58	2.93	1			
Audubon Park.....	11.25	4.42	15, 16			
Crowley.....		3.57	14			
Edgard.....	14.06	3.17	14			
Emilie.....	15.15	8.42	12-14			
Grand Coteau.....		2.80	20			
Houma.....	10.87	3.60	14			
Do.....		2.90	19			
Jackson Barracks.....		4.10	14, 15			
Jeanerette.....		2.80	20			
Lake Charles.....		3.50	15			
Luling.....	13.03	6.24	13, 14			
Mandeville.....	10.45	3.56	13			
Marksville.....		2.50	20			
Maurepas.....	10.39	7.55	15			
Monroe.....		5.73	12, 13			
New Iberia.....		2.60	20			
New Orleans.....		2.60	14, 15			
Paincourtville.....		3.21	15			
Plaquemine.....		3.46	11			
Shell Beach.....		2.50	20			
Sugar Experiment Station.....	11.25	4.42	15			
West End.....		3.10	14			
Michigan.						
Fairview.....		2.50	17			
Rochester.....		3.60	19, 20			
Mississippi.						
Agricultural College.....		2.78	12, 13			
Booneville.....	11.58	3.80	2			
Kosciusko.....	12.10	5.00	12, 13			
Do.....		3.00	21			
Logtown.....	10.95					
Louisville.....		2.75	6, 7			
Do.....		2.54	12, 13			
Palo Alto.....		2.67	6, 7			
Do.....		2.69	12, 13			
Pontotoc.....	10.99	4.00	11, 12			
Vaiden.....	12.43	3.00	7			
Do.....		3.50	11, 12			
North Carolina.						
Hendersonville.....	10.73					
Highlands.....	20.20	6.01	8, 9			
Do.....		3.65	21			
Murphy.....	12.87					
Ohio.						
Columbus.....		2.50	15, 16			
Columbus Barracks.....		2.60	15, 16			
Demos.....		2.63	17			
Granville.....		2.90	15, 16			
Gratiot.....		2.71	15, 16			
New Alexandria.....		3.13	16			
New Comerstown.....		2.50	16			
Ohio State University.....		2.60	16			
Salineville.....		3.10	16, 17			
Oregon.						
Bandon.....	14.08					
Gardiner.....	12.88					
Roseburg.....	11.50	2.90	12, 13			
Toledo.....	11.06					
West Fork.....	13.78					

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall in inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Tennessee.</i>						
Andersonville	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>h. m.</i>	
Chattanooga	10.30	3.77	9			
Clinton	10.20	2.71	8, 9	1.15	0 50	9
Dare		3.90	9, 10	1.75	1 00	3
Knoxville	10.15	2.97	8, 9			
Rockwood	11.24					
Rugby		2.50	9			
Sharps		2.66	3			
Springdale		3.30	9			
<i>Texas.</i>						
Fort Worth		2.80	19, 20			
<i>Utah.</i>						
Alta *	10.40					

Received too late to be used in general discussion for February, 1891.

Alabama.						
Childersburgh	11.69	3.00	9			
Florence	10.59					
Tallassee Falls	10.38	2.60	21			
Tuscaloosa	10.23					
Colorado.						
Cumbres	11.40					
Mississippi.						
Columbus		2.93	12-13			

Received too late for publication in January, 1891.

Missouri.						
Gordonville		4.10	11			

* Estimated from snowfall of 104 inches. † 1263 Obs., 1891.

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during February, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
Bismarck, N. Dak.*	Inch.		Inch.		Inch.	
Boston, Mass.	0.03	3	0.06	3	0.25	3
Buffalo, N. Y.	0.03	25	0.05	25	0.15	25
Cincinnati, Ohio	0.05	25	0.10	25	0.25	25
Chicago, Ill.	0.01	16	0.02	16	0.09	16
Cleveland, Ohio	0.05	16	0.07	16	0.30	16, 25
Denver, Colo.*						
Detroit, Mich.	0.03	17	0.05	17	0.23	17
Dodge City, Kans.*						
Duluth, Minn.*						
Eastport, Me.	0.07	3	0.11	3	0.27	3
Galveston, Tex.	0.07	20	0.14	20	0.36	14
Jupiter, Fla.	0.10	23	0.20	23	0.55	23
Kansas City, Mo.*						
Key West, Fla.	0.02	22	0.04	22	0.18	22
Marquette, Mich.*						
Memphis, Tenn.	0.25	8	0.35	8	0.55	8
New York City	0.00	7	0.04	7	0.17	7
New Orleans, La.	0.15	3	0.22	3	0.69	3
Norfolk, Va.	0.10	21	0.25	21	0.90	21
Philadelphia, Pa.	0.10	17	0.11	17	0.18	9
Philadelphia Water Works	0.10	17	0.12	17	0.20	9
Portland, Oregon	0.06	11	0.07	11	0.25	12
Saint Louis, Mo.†						
Saint Paul, Minn.*						
San Diego, Cal.	0.15	24	0.20	24	0.50	24
San Francisco, Cal.†						
Savannah, Ga.	0.12	21	0.20	21	0.50	1
Washington City	0.05	3	0.05	3	0.20	3
Wilmington, N. C.	0.10	1	0.12	1	0.25	1, 19

* No record on account of snow. † Not sufficient to register.

SNOW (in inches and tenths).

Chart V shows the depth of snowfall reported for the month. The greatest depth of snowfall reported was 120 at Rico, Colo.; 104 was reported at Alta, Utah; the snowfall exceeded 90 at Fort Lewis, Colo.; 80 at Cisco, Cal.; 50 at Era, Idaho, and Roscommon, Mich.; 40 in central N. Y., south-central and north-central Oregon, and extreme northwest Wyo.; 30 in southwest Mont., northeast Nev., north-central N. Mex., cen-

tral Wis., and south Vt.; 20 in an area extending from extreme west Me. to central N. Y., over the north part of the upper lake region and in north Wis., from northeast Cal. over the northern plateau region, in adjoining parts of northwest Oregon and southwest Wash., and at elevated stations in Colo., north N. Mex., and Nev.; and the monthly snowfall exceeded 10 in New England, N. Y., and northeast Pa., over the greater part of the upper lake region and thence over the middle Missouri valley, and generally over the middle and northern plateau regions and in the mountains of west Oregon and Wash. In the Atlantic coast states snow fell as far south as central Ga.; in the Gulf States to central Miss.; in northeast Tex.; in south N. Mex., and southeast Ariz.; and on the Pacific coast trace was reported in Cal. as far south as San Diego county.

The following shows the greatest depth of snow reported in the respective states and territories in February from 1882 to 1890, inclusive, with the year of occurrence: In 1890, Ala., Volunteer Springs, 22.0; Colo., Aspen, 44.0; Idaho, Fort Sherman, 43.2; Nebr., Kennedy, 19.0; N. Mex., Chama, 29.0; Oregon, Siskiyou, 46.0; Pa., Blue Knob, 31.0; Tex., Menardville, 12.0; Utah, Ogden, 34.0. In 1889, Ga., Athens, 7.5; N. Y., Lowville, 71.4; N. C., Mount Pleasant, 11.2; Ohio, Wauseon, 19.1; S. C., Belmont and Clinton, 14.0; W. Va., Middlebrook, 32.0; Wis., Portage, 61.0. In 1888, Mich., Sault de Ste. Marie, 56.5; Miss., Palo Alto, 1.0; Mont., Fort Maginnis, 36.5. In 1887, Cal., Cisco, 228.5; Me., Kent's Hill, 45.0; N. H., Quincy, 50.8; Vt., Strafford, 61.5; Wash., Port Angeles, 48.8; Wyo., Camp Sheridan, 46.5. In 1886, Ark., Lead Hill, 17.0; Ky., Richmond, 14.1; Mo., Pierce City, 15.0; Tenn., Austin, 21.0. In 1885, Ala., Greensborough, 6.5; Conn., North Colebrook, 23.0; Del., Delaware Breakwater, 8.1; Ill., Rockford, 25.0; Ind., Logansport, 23.2; Iowa, Muscatine, 24.2; Kans., Fort Scott, 15.5; N. J., Atlantic City, 22.0; N. Dak., Fort Buford, 26.1. In 1884, Nev., Fort McDermitt, 48.0; Minn., Chester, 36.0. In 1882, Washington, City, 14.2; Md., Deer Park, 24.0; Mass., Princeton, 44.0; R. I., New Shoreham, 25.3; Va., Fort Myer, 23.3.

In February, 1891, the first snow of the season was reported as follows: 9th, Olympia, Wash. 11th, Fort Canby, Wash. 14th, Roseburgh, Oregon, and mountains near Eureka, Cal. 21st, Keeler, Cal. 26th, Montgomery, Bermuda, Columbiana, Livingston, and Auburn, Ala.; Athens, Forsyth, and Milledgeville, Ga.; Vicksburg, Meridian, Greenville, Holly Springs, Vaiden, and Pontotoc, Miss.; Columbia and Statesburgh, S. C. On the 2d a heavy snow storm prevailed in the middle Missouri valley and the extreme northwest. On the 7th a heavy fall of snow occurred in north and east N. Y., causing damage to electric wires, &c. On the 8th a severe snow storm prevailed in west Nebr. and the adjoining parts of Wyo. and Colo. On the 16th heavy snow fell at Salt Lake City, Utah. On the morning of the 17th the snow that remained on the ground was covered with a yellowish-brown coating, and windows and clothing of persons who were out of doors between the hours of 9 p. m. and midnight of the 16th were spotted with the same substance; it resembled dust, and contained alkali and salt. On the 18th melting snow drifts in the neighborhood of Rapid City, S. Dak., revealed a large number of carcasses of frozen cattle. On the 20th drifting snow interrupted railroad traffic at Red Wing, Minn. On the 26th the first snow in 3 years fell at Meridian, Miss., and snow was quite general over the northern and central parts of the Gulf and south Atlantic states. A heavy snow storm prevailed over S. Dak. At the close of the month heavy snow was reported on the ground near Fort Du Chesne, Utah; telegraph lines were down, and the mail stage had been unable to run since the 22d. At Monero, N. Mex., the railroad was blockaded with snow, and no mail had been received from the east since the 16th.

Snowfall of 10.0, or more, was reported as follows, and in states and territories where the maximum depth was less than that amount, the station reporting the greatest is given: *Alabama*.—Valley Head, 0.27. *Arizona*.—Chiri Cahua Mountains, 4. *Arkansas*.—Brinkley, 2. *California*.—Cisco, 86;

Truckee (1), 67.2; Sisson, 48.2; Boca, 45; Susanville, 40.5; Fort Bidwell, 32.6; Walla Walla Creek, 30; Sims, 22.5; Towles, 15; Summit, 13.8. *Colorado*.—Rico, 120; Fort Lewis, 97; Dillon, 69.2; Breckenridge, 66.5; Stunner, 52.8; Leadville, 47.5; Climax, 43; Red Cliff, 37.7; Moraine, 30; Stamford, 19; Gunnison and Smoky Hill Mine, 17; Meeker, Parachute, and Villa Grove, 16; Arboles, 13.8; Fruita, 12; Delta and Lay, 11.5; Akron, 11.2; Burlington, Le Roy, and Sedgwick, 10. *Connecticut*.—Canton, 15; Mansfield, 14; New Hartford (1), 12.4; Falls Village and West Simsbury, 12; Southington, 11.5; Hartford (2), New Hartford (2), 11; Hartford (1), 10. *District of Columbia*.—Washington City, 1. *Georgia*.—Marietta, 0.3. *Idaho*.—Era, 51.8; Placerville, 49; Kootenai, 44; Henry's Lake, 42.9; Fort Sherman, 42.5; Payette, 29.5; Ruthburg, 22.1; Boise Barracks, 22. *Illinois*.—Rock Island Arsenal, 7.2. *Indiana*.—Crandall, 8. *Indian Ter.*—Fort Supply, trace. *Iowa*.—Manson, 18.8; Concord and Logan, 16; Hampton, 14.8; Sioux City, 12.8; Alta (1 and 2), 12; Cedar Falls, 11.7; Humboldt, 11.5; Larrabee, West Bend, and Charles City, 10. *Kansas*.—Lebo, 6.8. *Kentucky*.—Franklin, 5. *Maine*.—Kent's Hill, 20; Cornish, 19; Lewiston, 16; Portland, 15.3; Farmington, 14.5; Calais and Orono, 14; Eastport, 10.6; Fairfield and Fort Preble, 10. *Maryland*.—Gaithersburgh, 8. *Massachusetts*.—Florida and Groton (1), 26; Fitchburgh (2) and Gilbertville, 24; Fitchburgh (1), 23; Leominster, 22; Kendall Green and Leicester, 21; Newburyport (1), 20; Ludlow (1), Mount Nonotuck, Salem (2), and Wakefield, 19; Lawrence and Winchester, 18; Worcester (1), 17.8; Springfield Armory, 17.5; Amherst, Concord, Ludlow (2), and North Billerica, 17; Amherst Experimental Station (1 & 2), Chicopee and Worcester (2), 16; Fall River (1), 15.5; Milton, 15; Westborough, 14.8; Blue Hill (summit), 13.9; Boston and Fiskdale, 13.8; South Hingham, 13; Ashland and Randolph, 12; Dudley, 10.5; Somerset, 10.2; Roberts Dam, 10. *Michigan*.—Roscommon, 55.7; Atlantic, 47; Bear Lake, 31.9; Marquette, 30.8; Calumet, 28.5; Sault de Ste. Marie, 28.4; Rockland, 27.5; Gaylord, 27; Ivan, 26.5; Northport, 26; Gulliver Lake, 24.5; Bellaire, 24.2; Saint Ignace, 23.5; Fort Brady, 22.7; Fort Mackinac, 22; Alpena, 21.6; Lathrop, 19.8; Grayling, 19; Manistee, Caldwell, and Weldon Creek, 18; Crystal Falls and West Branch, 16.5; Buchanan and Olivet, 13; Alma, 12.5; Harrison, 12; Grand Haven, 11.2; Allegan, 10.3.

Minnesota.—Duluth, 21.8; Farmington and Minneapolis, 20; Northfield, 19.7; Montevideo and Rolling Green, 18; Leech Lake and Pine River, 16.8; Crookston, 16.3; Pokegama Falls, 15.9; Mankato, 15.7; Red Wing, 15.2; Morris, 13.1; Moorhead and Fort Ripley, 13; Faribault, 12.5; Saint Paul, 12.3; Alma City, 11.9; Fort Snelling, 11.2; Saint Charles, 11; Sheldon, 10.8; Grand Meadow, 10. *Mississippi*.—Water Valley, 1. *Missouri*.—Sedalia, 10.2. *Montana*.—Helena, 30; Fort Missoula, 29.5; Virginia City, 27; Martinsdale, 25.5; Choteau, 20.5; Fort Assinniboine, 19.2; Fort Shaw, 18.3; Blackfeet Agency, 14; Fort Keogh, 10.3. *Nebraska*.—West Hill, 28.5; Genoa, 21.5; Oakdale, 21.2; Ericson, 20; Creighton, 19.5; Marquette, 16.5; Valentine, 15.5; Red Willow, 15; Bassett, 14; Hay Springs, 13.7; David City, Dunning, Fort Sidney, and Lincoln, 13; Ravenna, 12.1; Alliance and Grand Island, 12; Fort Robinson, 11; West Point, 10. *Nevada*.—Toano, 30; Fenelon, 24.8; Pioche, 23.4; Palmetto, 23; Lewer's Ranch, 18.2; Belmont, 17.5; Austin, 16.8; Carson City, 15.2; Palisade, 15; Geneva, 14; Ely, 12.2; Crane's Ranch, 12; Carlin, 11.2; Reno State University, 10.7; Halleck, 10. *New Hampshire*.—Groveton and Plymouth, 22; Nashua, 21.2; Concord and Walpole, 20; Manchester, 19.3; Berlin Mills, 19; North Conway, 18; Hanover (1) and West Milan, 17; Hanover (2), 16; Littleton, 14; Antrim, 10.5; Stratford, 10.

New Jersey.—Dover, 12.5. *New Mexico*.—Monero, 38.9. *New York*.—Turin, 42.2; Utica, 37.8; Le Roy, 34; Alabama, 27; Quaker Street, 26; Brookfield and Sand Bank, 25; Rochester, 24.6; Cooperstown, 24; Watervliet Arsenal, 23; Syracuse, 22.2; Schodack Depot, 22; New Lisbon, 21.2; Galway, 21; Easton, 20.5; Perry City, 20.4; Bethlehem Centre, 19;

Ogdensburg, 18.5; Wedgwood, 18.1; Oxford, South Canisteo, and Wappinger's Falls, 17.5; Oswego, 16.7; White Plains, 16.5; Deposit, 15.8; Boyd's Corners, Malone, and Potsdam, 15; Romulus, 14.2; Demster, 14; Baldwinsville and Plattsburgh Barracks, 13.5; Akron, 13.2; West Point, 12.1; Apulia and Middletown, 12; Arcade, 11.9; Palermo, 11.8; Newark Valley, 11.5; Chenango Forks and Pendleton Centre, 11; Buffalo, 10.8. *North Carolina*.—Bryson City, 5.2. *North Dakota*.—Wahpeton, 14; Fort Pembina, 10.6; Gallatin, 10.2. *Ohio*.—Demos, 7. *Oregon*.—Hood River, 46.2; Lakeview, 40.2; Lone Rock and Vernonia, 36; Hardman, 33.8; Joseph, 30.5; Deer Island and La Grande, 28; Silver Lake, 27.4; Telocaset, 26; Baker City, 24.4; Happy Valley, 24.3; The Dalles, 18.8; West Fork, 15.9; Eola, 12; Portland, 11.4; Pendleton, 10. *Pennsylvania*.—Pleasant Mount, 19.8; Dyberry, 17.5; Blue Knob, 16; Salem Corners, 15.5; Nisbet and Blooming Grove, 15; Grampian Hills, 13.5; Eagle's Mere, 12.5; Le Roy, 12.3; Wilkes Barre, 11.7. *Rhode Island*.—Lonsdale, 14; Providence (1), 13; Providence (3), 12; Providence (2), 10. *South Carolina*.—Spartanburgh (1), trace.

South Dakota.—Oelrichs, 28; Parkston, 25; Webster, 24.5; Cross, 21.2; Spearfish, 21; Vermillion, 18; Wolsey, 16.2; Alexandria and Kimball, 16; Saint Lawrence, 14.5; Yankton, 13.8; Rapid City and Brookings, 13.5; Huron, 12.6?; Aberdeen and Canton, 12; Howard, 11.2; De Smet, 11; Fort Randall, 10.8. *Tennessee*.—Springdale, 7. *Texas*.—Grapevine, 0.1. *Utah*.—Alta, 104; Park City, 72.5; Parowan, 19.7; Levan, 15.8; Mount Pleasant, 15.5; Nephi, 14; Losee, 13; Richfield, 12.8; Grouse Creek, 11.5; Beaver, 11.2; Ogden (2), 10.5. *Vermont*.—Jacksonville, 30; Strafford and Vernon, 27; Brattleborough, 26; Chelsea, 18; East Berkshire, 15.8; Lunenburg, 14.5; Saxton's River, 14; Hartland, 13; Cornwall, 12; Northfield, 10. *Virginia*.—Casanova, Lynchburgh, Staunton, and Woodstock, 2.0. *Washington*.—Spokane Falls, 23; Walla Walla, 19.2; Fort Simcoe, 16.1; Seattle, 14.2; Waterville, 12.5; Blakeley, 12.2; Chehalis, 12. *West Virginia*.—Ella, 3. *Wisconsin*.—Chippewa Falls, 35; Bayfield, 28; Embarrass and Wauzeka, 27; Menomonee and Eau Claire, 24; Greenwood, 23; Oconto, 22; Plover, 21.5; De Pere, 21; Medford (1), 20.8; Rhinelander, 20; Hayward, 19.5; Peshigo, 18.4; Hammond, Hillsborough, Medford (2), and Neillsville, 18; Green Bay, 17.6; Manitowoc, 16.5; Elroy and Amherst, 16; Portage, 15.5; Appleton (1), 15; Centralia, 14; Oshkosh and Phillips, 13; Butternut and Glasgow, 12; Milwaukee, 11.1. *Wyoming*.—Camp Sheridan, 40.8; Fort D. A. Russell, 13.2; Cheyenne, 10.

DEPTH OF SNOW ON GROUND AT CLOSE OF MONTH.

Chart IV shows the depth of snow reported on the ground at the close of the month. At elevated stations in central Colo. a depth of 60.0, or more, was reported. At stations in Idaho, upper Mich., northeast N. H., south N. H. and Vt., and south-central Pa., a depth of 30.0, or more, was reported; it exceeded 20.0 generally over Idaho, west Mont., and upper Mich., and at stations in central N. Y.; and it exceeded 10.0 in east-central N. Y., in New England, save in the south part, over the north part of the upper lake region, north Wis. and Minn., and generally over the northern plateau. Trace of snow was reported on the ground north of a line traced from N. J., southwestward to extreme north Ga., thence west-northwest to central Colo., thence southwest to west-central N. Mex., thence northwestward to extreme north-central Cal., and thence northward to northwest Wash.

HAIL.

Description of the more severe hail storms of the month is given under "Local Storms." Hail was reported as follows: 1st, Nev., Pa. 2d, Ariz., Ill., Mo. 6th, Oregon, Wash. 7th, N. Y., Pa. 8th, Ill., N. Y., Tenn. 9th, Ind., N. Y., Ohio, Pa., Tex., Wash. 11th, Wash. 12th, Cal., Pa., Wash. 13th, Pa. 14th, Oregon. 15th, Cal. 16th, Cal. 17th, Cal., Nev. 18th, Ariz., Cal., Pa., Wash. 19th, Cal., Mo., Pa. 20th, Cal., N. Y., Pa., Tex. 22d, Cal. 23d, Ariz., Cal., Mo. 24th, Ariz.,

Ark., Cal., Ill., Ky., Mo., Nev. 25th, Cal., Conn., Ind., Ky., Ohio, Pa., Tenn. 26th, N. C., N. Y., Pa. 28th, Ala., Miss., R. I. SLEET.

Description of the more severe sleet storms of the month is given under "Local storms." Sleet was reported as follows: 1st, Ill., Me., N. Y., Pa. 2d, Ill., Ind., Iowa, Mass., Mo., Pa. 3d, Ill., Me., N. Y., Ohio, Pa., Vt. 6th, Ark., Mass., Nev., N. J., N. Y., Pa., R. I. 7th, Conn., Kans., Mass., Nev., N. J., Ohio, Oregon, Pa. 8th, Iowa, Kans., Mo. 9th, Ark., Ill., Ind., Ky., La., Mich., Miss., Mo., N. Y., N. C., Ohio, Pa., Tenn., Vt. 10th, Me., N. Y., Vt., Wash. 11th, Wash. 12th, Kans., N. J., Pa., Va., Wash. 13th, N. J. 14th, Oregon. 15th, Colo.,

Utah. 16th, Colo., Iowa, Mo., N. J., Va., Wis. 17th, Colo., Ill., Iowa, Ky., Mich., N. J., N. Y., Utah. 18th, Ill., Ind., Iowa, Kans., Ky., Mo., Pa., R. I., Wis. 19th, Colo., Ill., Ind., Iowa, Kans., Ky., Md., Mich., Minn., Mo., Nebr., Ohio., Pa., S. Dak., Tex., Va., Wash. 20th, Conn., Ill., Iowa, Mass., Mich., Nebr., N. J., N. Y., Ohio, Oregon, Pa., Vt., Va., Wash. W. Va., Wis. 21st, Nebr., Pa., Vt. 22d, Colo., Oregon, Utah. 23d, Colo., Ill., Nev., N. Mex., Oregon, Utah, Wash. 24th, Ariz., Cal., Colo., Ill., Iowa, Kans., Minn., Nev., S. Dak., Wis. 25th, Colo., Mo., Wis. 26th, Ark., Conn., La., Md., Mass., Miss., N. J., N. C., Pa., Va. 27th, R. I., Utah, Va. 28th, Colo., Ill., Ky., Miss., Oregon, Tenn., Utah.

WINDS.

The prevailing winds during February, 1891, are shown on Chart II by arrows flying with the wind. In New England, the Lake region, the upper Mississippi and Missouri valleys, and over the southern and middle plateau regions the winds were generally from southwest to northwest; in the middle Atlantic states, from the northwest; in Florida and the west Gulf states, from northeast to southeast; in the east Gulf states, the Rio Grande Valley, and on the north Pacific coast, from east to south; in the Ohio Valley, from south to west; in the extreme northwest, from northwest to north; on the northeast slope of the Rocky Mountains, over the northern plateau region, and on the middle Pacific coast, from southeast to southwest; on the southeast slope of the Rocky Mountains, from west to north; on the south Pacific coast, from west to northwest; and in the south Atlantic states, Tennessee, and on the middle-eastern slope of the Rocky Mountains, variable.

HIGH WINDS (in miles per hour).

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Signal Service, as follows: 4th, 56, nw., at Wood's Holl, Mass. 7th, 55, e., at Block Island, R. I.; 65, n., at Fort McKinney, Wyo. 8th, 54, nw., at Valentine, Nebr.; 52, nw., at Fort Sully, S. Dak. 9th, 50, se., at Fort Canby, Wash. 12th, 60, sw., at Fort Canby, Wash. 13th, 52, se., at Red Bluff, Cal. 14th, 52, sw., at Winnemucca, Nev. 15th, 50, sw., at Chicago, Ill. 16th, 56, w., at Winnemucca, Nev. 20th, 52, s., at Lexington, Ky. 22d, 50, s., at Winnemucca, Nev.; 50, nw., at Kitty Hawk, N. C. 23d, 52, sw., at Chicago, Ill.; 58, sw., at Winnemucca, Nev. 24th, 50, sw., at Abilene, Tex.; 52, sw., at Winnemucca, Nev.; 53, se., at Lexington, Ky.; 60, sw., at Chicago, Ill. 25th, 52, w., at Chicago, Ill.; 52, n., at Abilene, Tex. 26th, 56, w., at Jacksonville, Fla. 28th, 50, s., at Winnemucca, Nev.

LOCAL STORMS.

7th.—A severe sleet and snow storm caused great damage to electric wires in east-central, central, and south-central New York.

8th.—A heavy storm of wind and snow prevailed over Nebraska, west Iowa, South Dakota, and Minnesota, delaying railroad trains, and causing loss of life in Nebraska and South Dakota. At Valentine, Nebr., the storm was reported as one of the severest ever noted at that station. North and north-west winds of 30 to 52 miles per hour continued all day, and the snow drifted 4 to 10 feet deep. A soldier and 2 settlers were reported frozen to death 6 miles from the station. At North Platte, Nebr., the wind attained an extreme velocity of 60 miles. At Genoa, Nebr., the snow drifted 10 to 12 feet deep in places. At Elkton, S. Dak., a gale from the ne. reached about 80 miles per hour; 6 persons were lost in the storm and frozen to death. High north winds prevailed in San Bernardino county, Cal., causing considerable damage. The walls of the new sugar refinery at Chino were blown down, and many oranges were whipped from the trees by the wind. High northerly winds prevailed in the Santa Ana Valley, and

sand storms were reported in the Mojave and Colorado deserts. A sloop was wrecked off Catalina Island and 2 men lost.

9th.—At 3.30 p. m., central time, a tornado, moving n. 65° e., passed over Helena, Ala., damaging 10 buildings to the extent of about \$5,000. Heavy rain and heavy thunder prevailed before and light rain followed the passage of the storm. A whirling motion from right to left was observed; a roaring sound was heard, and articles were carried up. The path of greatest destruction was about 150 feet in width and about 2 miles in length. A severe storm was also reported at Talladega, Ala. At 3 p. m., central time, a storm moved northeast over Coaling, Ala., with thunder and lightning and heavy rain after its passage. A loud roaring sound was heard; the storm apparently revolved slowly from right to left and light articles were carried up. The width of the path of greatest destruction was about 500 yards. Timber in the centre of the path was generally prostrated in the direction the storm moved, although some trees were thrown outward. No persons were killed, but a number were injured. Several small buildings, valued at a few thousand dollars, were destroyed, and others were injured. The destruction of timber was very great. At Chattanooga, Tenn., heavy rain fell at intervals, flooding sewers. The rush of water into the artificial lake at the Electric Park, near the foot of Missionary Ridge, caused the embankment to give way, flooding the surrounding country. Railroads were seriously affected by washouts and landslides. At Bryson City, N. C., telegraphic communication was cut off and a bridge was carried away during a storm.

11th.—A severe wind storm, with thunder and rain, caused some damage to timber south of Soapstone Mount, N. C.

12th.—An unusually heavy storm visited Puget Sound at night, delaying boats.

13-14-15th.—A rain storm prevailed over north California and west Oregon on the 13th and 14th, swelling streams and causing washouts and landslides. At Red Bluff, Cal., the rain continued until midnight of the 15th, with a southeast gale. The abutments of 2 bridges were damaged, also the electric light plant. From midnight of the 14th to 7.05 a. m. of the 16th 6.07 inches of rain fell at Red Bluff, the greatest amount of precipitation noted for one storm in three years. The rainfall was also heavy in other parts of the state, and was of great benefit to the fruit crop.

16th.—A thunder-storm, with a shower of hail about the size of peas, occurred at Eureka, Cal., at 10 p. m., damaging electric wires. A severe wind storm was reported in Calaveras county, Cal.

17th.—High northwest winds and heavy snow prevailed in Minnesota. The snow drifted badly, delaying trains. A high e. wind, blowing 50 miles per hour, prostrated some timber at Lunenburg Vt.

18-19th.—A severe rain, sleet, and snow storm prevailed from Colorado to Indiana, prostrating electric wires. At Leavenworth, Kans., the damage to wires was estimated at \$3,000.

20th.—At Grand Haven, Mich., snow turned to rain which

froze as it fell. Telegraph wires were prostrated and communication was cut off. At San Antonio, Tex., heavy rain, with thunder, began at 7.45 a. m. Hail the size of chestnuts fell, breaking window glass. A severe storm moving north-east was reported at Cape Girardeau, Mo., in the morning.

21st-24th.—Heavy rain and gales prevailed on the Pacific coast, causing an immense amount of damage. A description of the floods resulting from the rainfall will be found under the heading "Floods." At San Francisco, Cal., rain began 10.30 a. m., 21st, and continued at intervals during the 22d. During this period the wind blew a gale, reaching a velocity of 50 miles per hour the night of the 22d, when the Signal Office anemometer cups were blown away. The ship "Elizabeth" was wrecked about 4 miles outside the Golden Gate, near Rocky Point, the evening of the 21st. The ship went to pieces soon after striking the rocks, and 18 of the 29 persons on board were drowned. The life-saving crews and tugs tried to save the ship and the persons on board, but owing to high wind little or nothing could be done. The captain of the life-saving crew was drowned. Much damage was done about the city and harbor by high wind. Some new and unfinished buildings were blown down, several barges were sunk, and telephone and telegraphic communication was almost entirely suspended. At Sacramento, Cal., high south winds prevailed on the 22d, and the barometer fell to 29.10, the lowest ever noted at that place. At Eureka, Cal., the barometer stood at 29.06 at 10 p. m. of the 21st, with wind blowing a gale from the southeast. At 8 p. m. of the 22d the barometer fell to 28.97, the lowest ever recorded at that place. At Roseburgh, Oregon, rain and heavy, moist snow alternated during the 22d, prostrating electric wires, and on the 24th rain fell at intervals, and washouts were reported on railroads to the southward. On the 23d, between 1 and 2 a. m., a heavy wind and hail storm at Berkeley, Cal., uprooted trees and stripped them of their branches. At San Diego, Cal., rain began in the early morning of the 22d and continued all day, with steady south to southeast wind. Heavy rain continued nearly all night of the 22-23d. On the 24th a heavy shower of rain fell in the afternoon. At Red Bluff, Cal., a southeast gale, with rain, prevailed from midnight to 3.30 a. m. of the 23d. At Olympia, Wash., light snow fell on the 23d, and the barometer fell to 29.00, the lowest since 1880. At Winnemucca, Nev., a south gale began 1.15 a. m., 23d, with maximum velocity 40 miles per hour. Rain began 4.45 a. m., and changed to moist snow, which ended 10.15 a. m. The gale ended 6.30 a. m. A second gale began shortly after noon, with sleet and snow squalls, and maximum wind velocity 58 miles per hour from the sw. The storm ended 11 p. m. Sheds were blown down and panes of glass blown in. At Keeler, Cal., high s. winds prevailed on the 23d, with rain in the morning. At 8 a. m. the barometer read 29.15, the lowest recorded at the station. Disastrous floods prevailed in west Arizona from the 22d to the close of the month. At Farley's Camp, Ariz., 4.00 inches of rain were reported in 9 hours on the 23d. A report from Cottonwood, Ariz., dated the 23d, stated that it had rained steadily for 6 days at that place. At Los Angeles, Cal., the barometer fell during the night of the 22-23d, with brisk s. to se. winds and rain, which fell heavily at times. At 8 a. m., 23d, the barometer read 29.50, corrected, the lowest reading recorded during a winter storm; the lowest barometer previously recorded being 29.52 during the great storm of February, 1884. An immense amount of damage was caused in that region by floods and freshets.

22d.—A storm, with thunder and lightning, moved ne. over Sunbury, N. C., at 10.30 a. m., eastern time, killing one child and doing about \$4,000 damage to property.

24th.—At 4.45 p. m., central time, a tornado moved north-east over Troy, Mo., and traveled about 6 miles in a direct line. Path of greatest destruction about 200 yards in width. Damage to buildings \$2,000 to \$2,500. Light rain fell just before the passage of the storm. The main part of the funnel seemed to be about one-half mile high, with a long, kite-like tail which hung down towards the earth. At West Bend, Iowa, a thunder-storm began about 6 a. m., and at 9 a. m. the wind changed to nw. and blew hard all day. The temperature fell 40° in 24 hours. At Manson, Iowa, high temperature and thunder and lightning prevailed in the early morning. The wind suddenly veered to w. and nw., reaching 35 to 40 miles per hour, with light snow, and the temperature fell 46° in 8 hours. At Amana, Iowa, the temperature was very high in the morning; at 2 p. m. the wind veered to w., and in 6 hours the temperature fell 31°, with wind blowing hard from the nw. At midnight a tornado moving e. was reported at Utica, Ind. The storm had a whirling motion from s. to e. and was attended by a continuous glare of lightning. Timber and other articles were carried up. All trees blown down were lying in an easterly direction, and some trees had the tops torn off. The path of greatest destruction was about 100 feet in width and passed through the centre of the town, where buildings were damaged to the extent of about \$6,000. Large timber was carried up by the storm and driven through the sides of houses. At Jeffersonville, Ind., a bell tower and a few trees were blown down in the eastern part of the city. About midnight, central time, a storm passed ne. over Newcastle, Ky., with very heavy thunder, lightning, small hail, and heavy rainfall following. A roaring sound was heard, and timbers were carried some distance. The path of heaviest wind was about 50 yards in width; buildings were damaged to the extent of about \$2,000. At Louisville, Ky., a heavy thunder-storm occurred the night of the 24-25th, with heavy rain and violent winds, the highest velocity, 40 miles per hour, occurring shortly after midnight. Much damage was caused to chimneys, etc.

25th.—A dust storm prevailed at Abilene, Tex., in the afternoon. The wind shifted to n., and reached 52 miles per hour. The instrument shelter of the Signal Office was carried away, some outhouses blown down, and other damage caused.

26th.—At Cape Henry, Va., a severe gale prevailed, with maximum velocity 54 miles per hour from the nw. at 5.22 p. m. Rain, with snow squalls, occurred in the evening. All vessels were compelled to seek shelter in Hampton Roads. At Jacksonville, Fla., a w. gale prevailed, with light rain in the morning. The wind reached a velocity of 56 miles per hour at 3.50 p. m. This velocity has been exceeded but once at that station, in March, 1872, when the wind reached 58 miles per hour from the ne. A number of houses and electric wires were damaged.

28th.—A heavy thunder-storm, with rain changing into snow, prevailed over southeast Massachusetts. At Wellfleet a church was struck by lightning and burned. At Truro the signal station was struck by lightning and set on fire. At Cape Cod Light station articles in the dwelling were torn to pieces and the keeper's wife was stunned. At New Bedford a heavy wind, thunder, rain, and snow storm occurred in the evening. At Smith's Neck, Misharm Point, South Dartmouth, Martha's Vineyard, and on Elizabeth Islands, and at other points, buildings were struck by lightning and burned.

INLAND NAVIGATION.

FLOODS.

On the 2d the Ohio River was rising rapidly at Cincinnati, Ohio, and Louisville, Ky. At Cincinnati the river was 38.9 feet on the gauge at 7 a. m., a rise of 13.9 feet in 48 hours.

This almost unprecedented rise was due to sudden outpours from the Little Miami and Licking rivers. During the day the river rose at the rate of 0.2 foot per hour. At Louisville the water was 16.6 feet in the canal at 5 p. m. On the 3d the

river had risen to 43.2 feet at Cincinnati. At Louisville the river continued to rise and at 5 p. m. there was a depth of 20.3 feet in the canal. The Tennessee River was rising at Chattanooga, Tenn. On the 4th the river reached the danger-line, 45.0 feet, at Cincinnati at 1 a. m.; at 7 a. m. it stood at 45.6 feet; and at 10 a. m. at 46 feet. At Louisville the depth of water in the canal at 5 p. m. was 21.3 feet. At Chattanooga, Tenn., the Tennessee River was rising at the rate of more than 0.1 foot an hour. On the 5th the river at Cincinnati reached 47.5 feet at 7 a. m., and 47.8 feet at 7 p. m. At Louisville there was a depth of 22.2 feet in the canal at 5 p. m. The Tennessee River continued to rise at Chattanooga. On the 6th the river at Cincinnati reached its highest point, 47.9 feet, in the early morning. At 10 a. m. it stood at 47.8 feet, and at 4 p. m. at 47.6 feet. At Louisville 22.9 feet was reached. On the 7th the river was falling at Cincinnati and at all points above. At Louisville it was stationary at 22.8 feet. On the 8th the river was falling at Louisville. On the 9th the Tennessee River began to rise at Chattanooga at 9 a. m., and rose rapidly the balance of the day. On the 10th the river continued to rise at Chattanooga, and persons living below the danger-line were moving to higher ground. A large boom on the Little Tennessee, near Lenoir's, containing over 4,000,000 feet of logs, and valued at \$80,000, broke the night of the 9-10th. The Tennessee River rose rapidly at Knoxville, Tenn. On the 11th the river rose rapidly at Chattanooga, Tenn. At Knoxville the river rose to 21.9 feet at 8 a. m., and then commenced to fall.

On the 11th and 12th freshets were reported in the Broad River, North Carolina. On the 12th the Ohio River was rising slowly at Cincinnati, and was near the danger-line. The river rose slowly at Louisville, and at 5 p. m. there was a depth of 20.8 feet in the canal. The Tennessee River continued to rise at Chattanooga, and portions of the city were flooded; at 5 p. m. the water was 2.5 feet above the danger-line. At Knoxville the river was falling. On the 13th the river reached 46.3 feet at Cincinnati at 7 a. m., after which time it fell rapidly. At Cairo, Ill., the river reached the danger-line, 40 feet, flooding bottom lands. At Chattanooga the Tennessee River continued to rise; traffic on mountain railroads was stopped; and the country between Lookout Mountain and Missionary Ridge was submerged. On the 14th the river at Chattanooga was nearly stationary at 37.5 feet at 7 a. m.; it reached 37.55 feet at 7.30 a. m.; remained at that height until 10 p. m., after which it began to fall. On the 15th the Cumberland River was above the danger-line, 40 feet, at Nashville, Tenn. On the 15th, 16th, and 17th heavy rainfall was reported at the headwaters of the Allegheny and Monongahela rivers.

On the 16th the Conemaugh River rose to an alarming height at Johnstown, Pa., by noon, and from that time the water rose 1.0 foot an hour; public schools were dismissed and the Cambria Iron Works were closed; by 3 p. m. many streets were flooded, and at night one-half the city was under water. Streams in east Ohio and West Virginia rose rapidly, causing great damage. At Cincinnati, Ohio, the river rose to 45.8 feet at 4 p. m.; Mill Creek was very high, and bridges were carried away. At Red Bluff, Cal., streets were flooded, and the river reached 15 feet at noon, 15th, a rise of 7 feet in a few hours. Much damage was caused by flood in Butte county, Cal., by the overflow of the Sacramento River. On the 17th the rivers were rising at Pittsburgh, Pa., and passed the danger-line. At 11 p. m. the river stood at 29.9 feet on the gauge, 7.9 feet above the danger-line. Portions of the 1st, 4th, and 8th wards, Allegheny City, were flooded, and travel on the street railroad between Pittsburgh and Allegheny City was suspended at 4.30 p. m.

At Parkersburgh, W. Va., the river rose 11 feet in 24 hours. At Cincinnati, Ohio, a steamboat was wrecked by colliding with a pier of the bridge. Two passengers were killed, 3 injured and 2 were missing. The accident was in a measure due to the unusually swift current. At Louisville the river was rising slowly. A flood prevailed in the West Branch of

the Susquehanna River, Pa. At Harrisburg, Pa., the Susquehanna River rose rapidly. On the 18th streams flooded their banks, causing much damage to bridges and mountain roads about Blue Knob, Pa. At Pittsburgh, Pa., the river reached 31.3 feet on the gauge at 6 a. m.; it remained stationary until 10 a. m., when it began to fall. The marks on the 7th street bridge across the Allegheny River showed 32 feet in the early morning; with the exception of the flood of February 6, 1884, this was the highest stage of water noted at that point since the observations began. Streets in low-lying parts of Pittsburgh and Allegheny City were flooded. At Wheeling, W. Va., the river stood at 43.8 feet at 6 p. m., and was rising 4 inches an hour. All railroads suspended operations, and streets and houses were flooded. At Parkersburgh, W. Va., the river rose 7.5 feet in 24 hours, and damage by flood was threatened. Owing to heavy rain streams were rising rapidly and overflowing in Arizona. The telegraph line between San Carlos and Fort Thomas was rendered useless by the tripods being washed out in the Gila River, letting the line into the water. A report from Globe stated that a disastrous flood occurred at that place, sweeping away over 20 houses and drowning one man. At Fort Apache the river was very much swollen, and the roads were almost impassable. At Tip Top Cottonwood Creek was the highest ever known, and houses, roads, etc., were washed away. The Little Colorado River was very high at Holbrook. Near Whipple Barracks (Prescott) railroad bridges were carried away. At Yuma rain fell at intervals, and washouts occurred along the railroad.

On the 20th the Susquehanna River was 2 feet above the danger-line at Harrisburg, Pa., and it had risen 5 feet during the preceding night. Much damage was caused in low-lying parts of the city. Flood caused great damage in Venango county, Pa. The river was falling slowly at Pittsburgh, Pa. The river stood at 41.4 feet on the gauge at Parkersburgh, W. Va., at 8 a. m.; all railroad trains were abandoned in that region, and Riverside was under water. At Wheeling, W. Va., the river fell slowly. At Cincinnati, Ohio, the river began to rise slowly. At Tiffin, Ohio, the Sandusky River was higher than at any time during the past winter. At Louisville, Ky., the river was falling rapidly. Drift-wood was reported in the Mississippi River at New Orleans, La. Destructive floods continued in Arizona. At Simmons the flood was reported the most extensive in 21 years. The river was very high at Fort Thomas. Flood conditions prevailed along the Little Colorado River at Holbrook. At Fort Apache roads were impassable for wagons. On the 20th the Susquehanna River fell 1 foot at Harrisburg, Pa. At Parkersburgh, W. Va., the river continued to rise, causing heavy loss in low-lying districts. At midnight the water was 44 feet 10 inches; with the exception of the flood of February, 1884, when the water reached 54 feet 2 inches, this stage was the highest noted at that place in 60 years. The Monongahela and Allegheny rivers were rising. At Cincinnati, Ohio, the river reached 45 feet, the danger-line, at 11 a. m. Rivers and streams continued high in Arizona. On the 21st the river was falling at Parkersburgh, W. Va. At Cincinnati, Ohio, the river reached 50 feet at 8 a. m. At 8 p. m. it reached 52.2 feet and was rising 0.1 foot an hour. The lower floors of houses at low points on the water front were submerged. Up-river boats had not made trips for two days. At Louisville, Ky., the river rose rapidly, reaching 22 feet in the canal at 5 p. m. Small streams were out of their banks in central Indiana. The Tennessee River rose at Chattanooga, Tenn., from the 21st to 25th. Rivers continued high in east Arizona.

On the 22d the river rose steadily at Cincinnati, Ohio, reaching 54.8 feet at midnight. Parts of Cincinnati and Newport, Ky., and the Mill Creek and Little Miami bottoms were flooded. All large steamboats were tied up. At Louisville, Ky., the river reached 25.6 feet, 1.6 foot above the danger-line. Streams were high and flooding their banks in Indiana, Illinois, and Missouri. The Mississippi River reached a dangerous height at Natchez, Miss. Heavy rain storms and floods pre-

vailed in Arizona. The Salt River flooded its banks in Maricopa county, doing great damage near Phoenix; the Little Colorado was high at Holbrook, and the Gila River at San Carlos. At Yuma the river rose rapidly, the rise, at times, being at the rate of 1 foot an hour. At noon the backwater from the Gila River reached a dangerous height. About 8 p. m. the levee broke, and a large body of water poured through that portion of the town east of Main street, and half an hour later that street was covered with about 4 feet of water, and houses were being undermined and demolished. By 9 p. m. fully one-half of the houses in the town were in ruins and hundreds of people were destitute. One life was lost. Heavy washouts occurred on the railroad east of Yuma. At San Diego, Cal., the telegraph lines were down and streams were running full.

On the 23d the upper Ohio River was falling, a rise was, however, reported at the headwaters of the Ohio. Immense damage had been caused and large areas continued under water along the Ohio River and tributaries. At Cincinnati, Ohio, the river reached 56 feet, and many houses were being abandoned in the submerged districts. At Louisville, Ky., the river rose slowly, reaching 27.7 feet in the canal at 5 p. m. Floods prevailed along the smaller streams of the Ohio Valley, and the Mississippi River was dangerously high from Memphis, Tenn., southward. All streams in Arizona were extremely high. At Yuma the river was 29 feet 6 inches in the morning, but had been higher during the night. At 9 a. m. the water on Main street had fallen about 3 feet below its highest point. All telegraph wires were down. In many parts of the territory the streams were higher than ever before known, and farms and irrigating ditches were badly washed. Floods and freshets prevailed in south California as the result of heavy rain. Railroad and telegraphic communication was generally cut off from Los Angeles, Cal. Washouts occurred and bridges were destroyed on the railroads. No material damage was done in the city of Los Angeles. The Los Angeles River washed away its banks in many places north of the city, destroying much valuable property. Considerable property was destroyed in the San Fernando Valley. South of the city the Los Angeles River changed its course, taking the old channel from which it was diverted during the storm of December, 1889, flooding the country and destroying much valuable property. The San Gabriel River was diverted into a new channel some distance above Duarte, making a current about 1,000 feet wide, which, rushing along with irresistible force, flooded the country below lower Duarte, and three persons were drowned. At Red Bluff, Cal., the Sacramento River rose 17 feet. On the 24th the river reached 57 feet at Cincinnati, Ohio, at 3 p. m.

On the 24th the Colorado River was rising at Yuma, Ariz., and the Salt and Gila rivers were rising rapidly. At Holbrook and Fort Thomas the rivers were the highest ever known, and much damage was caused. At Eagle Pass the Gila River was 7 feet above high-water mark; bottom lands along the Gila and San Francisco rivers were submerged; many lives were reported lost, and great destruction was done to farms, buildings, etc. Great destruction was caused to property and roads about San Carlos. Mountain streams near San Diego, Cal., were overflowing, and railroad communication was cut off. Along the lower Mississippi River the water stood at or near the danger-line in several places. On the 25th the river at Cincinnati, Ohio, became stationary at 57.4 feet at 6 p. m., and the water had risen 16 feet in 6 days. At Louisville, Ky., the river reached 31 feet, and the lower floors of houses in low-lying districts were flooded. The upper Ohio, Kanawha, and Big Sandy rivers were falling. At Chattanooga, Tenn., the Tennessee River stood at 29 feet, a rise of 13 feet in 4 days. At Nashville, Tenn., the Cumberland River reached 24.4 feet, a rise of 3 feet in 3 days. At Saint Louis, Mo., there had been a rise of 5 feet in 1 day. At Cairo, Ill., the stage of water was 44.3 feet and rising. High water was impending in the Mississippi River below Cairo. At Yuma, Ariz., the river rose gradually. At San Carlos the Gila River

had risen 2 feet during the night, and the Little Colorado continued high at Holbrook. A report from San Diego, Cal., stated that great damage was caused by flood in the Tia Juana Valley, where the water was the highest ever known.

On the 26th the river was falling slowly at Cincinnati, Ohio. At Louisville, Ky., the river was stationary at 32.3 feet. At Memphis, Tenn., the Mississippi River reached the danger-line, 33 feet, in the morning, and it was 1.9 foot above the danger-line at New Orleans, La. At Yuma, Ariz., the river rose rapidly, and at 8 p. m. had reached a point above the graduation on the gauge, and the reading at that hour was estimated 32 feet. The embankment on Main street which had been repaired again gave way in the afternoon and in a short time nearly every house on that street was in ruins. The water began to come in the quartermaster's property in the afternoon, and at midnight had nearly reached the signal office. At 10 p. m. the water in the Colorado River was running over the piers. At Albany, N. Y., the Hudson River was higher than in five years. In the Mohawk Valley, N. Y., the water was very high, and the tracks of the New York Central Railroad were blocked with water and ice between Fort Plain and Saint Johnsville. The train service was interrupted on the Hudson River Railroad at Poughkeepsie owing to heavy freshets in the upper Hudson, and the tracks between Scho-dack and Stuyvesant were covered with water and ice. In Saint Lawrence and Lewis counties, N. Y., flood submerged towns and carried away houses. Part of Binghamton, N. Y., was flooded by high water in the Susquehanna River.

On the 27th the river at Yuma, Ariz., reached its highest mark, 33.2 feet, at 1 a. m. at the railroad bridge, and was 4 feet 8 inches higher than ever before known. After that hour the river fell rapidly. The Signal Service observer at Yuma states that the river probably rose about 4 inches higher than the stage given, but owing to darkness the exact height could not be determined. On this date the rivers were stationary at Louisville, Ky., and Memphis, Tenn. In Arizona the rivers and small streams were falling. At Yuma the loss to citizens of that place by flood was estimated at over \$300,000, and the loss sustained by the railroads was immense. At the close of the month there had been no arrival or departure of trains since the 22d. On the 28th the river was 5.5 feet above the danger-line at Cairo, Ill., and was rising slowly. At Memphis, Tenn., the river was at the danger-line, and at Vicksburg, Miss., it was 2.2 above the danger-line.

ICE IN RIVERS AND HARBORS AND OPENING OF NAVIGATION.

Connecticut River.—Navigation was resumed at Essex, Conn., on the 11th, after having been closed about 6 weeks.

Hudson River.—The ice in the river below Newburgh, N. Y., was reported in a weakened condition on the 22d, and boats were preparing to resume their trips. On the 25th the heavy ice in the river at Albany, N. Y., broke up and moved down the river. From Newburgh to New York City navigation had been resumed.

Susquehanna River.—Navigation opened at Wilkes Barre, Pa., on the 23d; floating ice was reported at that point on the 3d and 5th to 7th. At Lock Haven, Pa., floating ice was reported on the 1st, 2d, and 5th.

Detroit River.—Floating ice was reported at Detroit, Mich., on the 6th, 8th, and 12th.

Black River.—Ice was broken up on the 24th and forced down the river, and a heavy jam was formed at Port Huron, Mich., on the 25th.

Saint Clair River.—Floating ice on the 13th at Port Huron, Mich.

Mississippi River.—At Dubuque, Iowa, the ice was quite firm on the 4th, and persons were crossing for the first time during the present winter. At Muscatine, Iowa, the river closed on the 4th; teams crossed on the 10th; and the river was clear of ice on the 15th. At Davenport, Iowa, the river froze over on the 4th; river clear of ice on the 18th; frozen over again on the 22d; and clear of ice on the 24th. At Warsaw,

Ill., the river was closed by a gorge 4 miles below that place on the 4th; gorge broken on the 11th. At Alton, Ill., floating ice was reported on the 4th to 6th, 10th, and 11th.

Missouri River.—Floating ice in the river at Leavenworth, Kans., on the 2d to 7th, 9th to 12th, 19th to 21st, and 25th to 28th. Ice in the river at Kansas City, Mo., 2d to 13th, 17th to 22d, 27th, and 28th. Running ice at Saint Joseph, Mo., 1st, 2d, 7th to 11th, 17th to 22d, 25th, 26th, and 27th; ice blocked at the draw in the bridge on the 28th. At Hermann, Mo., floating ice on the 4th to 6th and 16th.

Light drift ice was reported in the harbor at Portland, Me., on the 8th. Lake Champlain was clear of ice at Burlington, Vt., on the 1st, but was partially closed the latter part of the month. Navigation was obstructed by slush ice at Grand Haven, Mich., on the 3d to 6th, 9th and 10th.

Heights of rivers above low-water mark, February, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La.	29.9	11, 13	25.2	28	21.5	3.7
Arkansas River.						
Fort Smith, Ark.	23.0	25	11.9	20	3.3	8.6
Little Rock, Ark.	23.0	27	14.5	20	8.1	6.4
Missouri River.						
Fort Buford, N. Dak.						

Heights of rivers—Continued.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Missouri River—Continued.						
Kansas City, Mo.	21.0	23	7.5	5	2.8	4.7
Mississippi River.						
Saint Paul, Minn.	14.0					
La Crosse, Wis.	13.0					
Dubuque, Iowa	16.0					
Davenport, Iowa	15.0					
Keokuk, Iowa	14.0	21	5.2	1	1.1	4.1
Saint Louis, Mo.	30.0	26, 27	11.5	9, 11	3.4	8.1
Cairo, Ill.	40.0	28	45.5	1	27.9	17.6
Memphis, Tenn.	33.0	26, 27, 28	33.0	1	19.0	14.0
Vicksburg, Miss.	41.0	28	43.2	2	28.2	15.0
New Orleans, La.	13.0	26	14.9	4, 5, 6, 7	11.0	3.9
Ohio River.						
Pittsburgh, Pa.	22.0	18	31.3	7, 15	9.2	22.1
Parkersburg, W. Va.	38.0	21	44.0	10	16.0	28.6
Cincinnati, Ohio	45.0	25	57.4	1	33.6	23.8
Louisville, Ky.	24.0	20	32.3	1	13.3	20.0
Cumberland River.						
Nashville, Tenn.	46.0	15	41.2	23	20.4	20.8
Tennessee River.						
Chattanooga, Tenn.	33.0	14	37.5	1	9.8	27.7
Knoxville, Tenn.	39.0	11	21.9	1.8	5.2	16.7
Monongahela River.						
Pittsburgh, Pa.	29.0	18	31.3	7, 15	9.2	22.1
Savannah River.						
Augusta, Ga.	33.0	9	27.2	16	13.1	14.1
Willamette River.						
Portland, Oregon	15.0	15	5.7	5	1.3	4.4

* Frozen.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculae.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.		
Feb., 1891.										
1, 2 p. m.	0	0	1	2	0	0	2	22	0	Definition fair; spots small.
2, 9 a. m.	1	1	0	0	0	0	3	10	1	Definition good; spots small.
4, 9 a. m.	0	0	1	6	0	0	0	0	1	Definition poor; spots small.
5, 9 a. m.	1	1	0	0	0	0	1	1	1	Definition poor; spots small.
6, 9 a. m.	0	0	0	0	0	0	1	2	2	Definition fair; spots small.
8, 10 a. m.	1	1	0	0	0	0	2	2	1	Definition good; spots small.
10, 10 a. m.	1	30	0	0	0	0	2	33	0	Definition fair.
11, 11 a. m.	1	33	0	0	0	0	2	35	0	Definition fair.
13, 3 p. m.	1	3	0	0	1	...	2	36	1	Definition good; 1 large spot.
14, 9 a. m.	1	3	0	0	0	0	4	32	1	Definition fair; 1 large spot.
15, 9 a. m.	0	3	0	0	0	0	4	34	2	Definition good; 1 large spot.
18, 9 a. m.	2	14	0	0	0	0	5	36	4	Definition fair.
19, 11 a. m.	0	0	0	0	0	0	4	14	1	Definition bad.
22, 9 a. m.	2	30	0	0	0	0	6	53	3	Definition good; immense faculae.
23, 4 p. m.	0	0	0	0	0	0	4	45	1	Definition good.
24, 10 a. m.	0	0	0	0	0	0	3	28	1	Definition fair.
25, 10 a. m.	0	27	0	0	0	0	3	46	3	Definition fair.
27, 9 a. m.	1	2	1	0	0	0	3	35	1	Definition good.
28, 9 a. m.	0	0	0	0	0	0	1	18	1	Definition good; spots small.

Mr. D. E. Hadden, Alta, Iowa: 1st, 2 groups, 3 spots; groups n. latitude. 2d, 1 group, 1 spot. 3d, large group; faculae near nw. limb. 5th, 1 group, 1 spot, and faculae;

spots small sw. 6th, faculae. 7th, faculae on e., se., and w. limbs. 10th, 1 group, 10 spots, and faculae; group n. latitude e. of meridian. 11th, 2 groups; aurora preceding evening; 15 spots, and faculae; new group s. latitude; 4 large spots in group n. latitude; faculae on w. limb. 2 groups, 12 spots; brilliant faculae by rotation on se. limb. 13th, 3 groups, 12 spots, and faculae; new group se. 14th, 3 groups, 9 spots, and faculae; groups se., nw., and sw. 15th, 2 groups; large faculae by rotation on se. limb. 17th, 1 group about 2 days in on ne. limb; clouds; could not count spots; suspected aurora in the evening. 18th, 2 groups, 12 spots, and faculae; penumbra around spots in large group; other group, small, e. of larger group. 20th, 3 groups, 18 spots; large areas faculae by rotation on ne. limb. 21st, 3 groups, 12 spots, and faculae; large group unchanged; penumbra around spots. 23d, 3 groups, 9 spots; large faculae e., and near w. limb. 26th, 2 groups, 6 or 8 spots; faculae on nw. and w. limbs; groups near meridian n. latitude. 28th, 1 group, 2 spots; extensive groups faculae w.; spots in faculae. Cloudy 8th, 16th, 19th, 24th, 25th, and 27th.

Mr. John W. James, Riley, Ill.: none seen till 11th, then 2 groups on sun's meridian in n. latitude. 12th, 2 new groups 1 day past meridian in s. latitude. 13th, 1 group gone. 14th, 2 new spots in s. latitude w. of meridian; prominent faculae on se. edge of disc, followed next day by a large faint spot. 18th, 2 new groups in n. latitude; these were on sun's meridian 20th, and the largest spot in them disappeared by solar rotation 26th. 25th, 1 new group on sun's meridian in n. latitude. 27th, 28th, no spots seen.

Mr. H. D. Govey, North Lewisburgh, Ohio: sun spots were observed on the 10th, 11th, 13th, 14th, and 22d.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were widely observed on the 9th, when they were noted in Ind., Iowa, Minn., S. Dak., and Wis.; on the 11th, when they were noted in Ill., S. Dak., Wis., Mich., Mass., N. H., and Me.; on the 12th, when they were noted in Me., Mass.,

Mich., and Mont.; and on the 14th, when they were noted in Ill., Mich., Mass., N. H., and Me. On the 11th, at 10.40 p. m., a brilliant aurora was observed at Portland, Me. It appeared as a whitish glow resting upon a dark segment, and reached altitude about 15°, and extended from 160° to 220° of azimuth.

The display reached its greatest brilliancy about 11.20 p. m., when streamers reached altitude about 45°. After that hour the streamers slowly drifted from the centre towards either side. The display continued until after midnight. On the 11th an aurora of a pale white color, accompanied at times by "merry dancers," was visible at Detroit, Mich., from 9.20 p. m. until nearly midnight. The display was first observed in the west and extended to altitude about 25°. On the 11th an auroral arch, extending from azimuth 161° to 224° and reaching altitude 20°, was observed at Fort Sully, S. Dak., from 10 p. m. to midnight. There were 2 arches, and beneath the inner arch was a dark segment, the northeast portion or right half of which was partly overspread with a bright light. Shortly before and after the disappearance of the aurora bright cloudy patches were seen above the eastern and western extremities of the arch. On the 12th an aurora consisting of a bright yellow arch above a dark segment was observed at Sault de Ste. Marie, Mich., from 10.30 to 11.45 p. m. The display reached altitude 20°, and extended from nw. to ne. Numerous slender beams were observed, some of which reached altitude 25°. The display attained its greatest brilliancy about 11.20 p. m.

Auroras were reported as follows: 7th, Kimball, S. Dak. 8th, Cambridge, Mass. 9th, Seymour, Ind.; Alta, Cresco, and Williams, Iowa; Red Wing, Montevideo, Morris, Sheldon, and Pine River, Minn.; Parkston, Webster, and Wolsey, S. Dak.; Hayward and Medford, Wis. 11th, Riley, Ill.; Eastport and Portland, Me.; Fall River, Royalston, Cambridge, Newburyport, and Blue Hill Obs., Mass.; Detroit, Caldwell, and Gulliver Lake, Mich.; Choteau, Mont.; Hanover, N. H.;

Eagle's Mere, Pa.; Wolsey, S. Dak.; Peshtigo, Wis. 12th, Portland, Me.; Blue Hill Obs., Mass.; Sault de Ste. Marie, Mich.; Glendive, Mont. 13th, Eastport and Orono, Me.; Hanover, N. H. 14th, Sandwich, Ill.; Eastport, Me.; Cambridge, Mass.; Caldwell, Mich.; Hanover, N. H. 15th, Nashua, N. H. 18th, Bellevue, Ohio. 20th, Plymouth, N. H.; Bellevue, Ohio; Hanover, N. H.

THUNDER-STORMS.

Thunder-storms were reported as follows: east of the Rocky Mountains thunder-storms were reported in the greatest number of states, 15, on the 25th; in 14 on the 8th; in 12 on the 20th; in 11 on the 9th and 19th; in 10 on the 24th and 28th; in 9 on the 2d; in 8 on the 3d and 21st; in 6 on the 1st and 12th; in 5 on the 7th; in 4 on the 17th; in 3 on the 6th and 26th; in 2 on the 10th, 11th, 13th, 18th, and 23d; and in 1 on the 5th, 14th to 16th, and 27th. The 4th and 22d, were the only dates on which no thunder-storms were reported.

East of the Rocky Mountains thunder-storms were reported on the greatest number of dates, 12, in N. C.; on 11 in Miss.; on 10 in La.; on 9 in Ala.; on 8 in Ark.; on 7 in Ill., Ind., and Mo.; on 6 in Fla., Ky., Mass., Ohio, S. C., and Tenn.; on 5 in Ga. and Tex.; on 4 in Wis.; on 3 in Kans., Mich., and Pa.; on 2 in Conn., Iowa, and N. J.; and on 1 in Ind. T., Md., N. H., N. Y., Okla. T., R. I., Vt., and Va. West of the Rocky Mountains thunder-storms were reported as follows: Ariz., 23d and 26th; Cal., 12th, 16th, 22d to 24th, and 28th; Colo., 23d; Oregon, 12th and 14th; Utah, 23d; Wash., 19th, 20th, and 22d. In Del., D. C., Idaho, Me., Minn., Mont., Nebr., Nev., N. Mex., S. Dak., N. Dak., and Wyo., no thunder-storms were reported.

VERIFICATIONS.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for February, 1891, were made by 1st Lieutenant W. A. Glassford, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant John P. Finley, 19th Infantry.

Percentages of forecasts verified, February, 1891.

States.		States.	
Maine.....	90.6	Kentucky.....	83.9
New Hampshire.....	94.9	Ohio.....	90.5
Vermont.....	92.1	West Virginia.....	90.7
Massachusetts.....	92.6	Indiana.....	89.9
Rhode Island.....	97.4	Illinois.....	90.9
Connecticut.....	95.0	Lower Michigan.....	90.4
Eastern New York.....	93.4	Upper Michigan.....	82.2
Western New York.....	89.3	Wisconsin.....	86.4
Eastern Pennsylvania.....	90.6	Minnesota.....	83.9
Western Pennsylvania.....	92.4	Iowa.....	83.8
New Jersey.....	89.6	Kansas.....	80.6
Delaware.....	92.3	Nebraska.....	78.9
Maryland.....	89.8	Missouri.....	87.7
District of Columbia.....	92.4	Colorado.....	77.6
Virginia.....	90.1	North Dakota.....	86.4
North Carolina.....	86.5	South Dakota.....	79.1
South Carolina.....	84.5	Southern California*.....	83.4
Georgia.....	81.7	Northern California*.....	92.3
Eastern Florida.....	87.3	Oregon*.....	85.7
Western Florida.....	86.8	Washington*.....	82.3
Alabama.....	87.6	By elements: Weather.....	90.4
Mississippi.....	85.1	Temperature.....	84.2
Louisiana.....	86.6	Monthly percentage of weather and	
Texas.....	83.2	temperature combined.....	87.9
Arkansas.....	88.3		
Tennessee.....	88.5		

* In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. † The forecasts of temperature in districts east of the Rocky Mountains for February, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. ‡ The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

FORECASTS FOR 48 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief Signal Officer has authorized forecasts for 48 and 72 hours, covering the 2d

and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 98; temperature, 75. Percentages of verifications: weather, 51.6; temperature, 83.3; weather and temperature combined, 64.0.

WIND SIGNALS FOR FEBRUARY, 1891.

Statement showing percentages of justifications of wind signals for the month of February, 1891:

Wind signals.—(Ordered by Lieutenant W. A. Glassford). Total number of signals ordered, 116; justified as to velocity, wholly, 76, partly, 6; justified as to direction, 110. Of the signals ordered 88 were cautionary, of which 57 were wholly and 3 partly justified; and 28 were storm signals, of which 19 were wholly and 3 partly justified. 25 signals were ordered for easterly winds, of which 23 were justified, and 91 were ordered for westerly winds, of which 87 were justified. Percentage of justifications, 69.7.

COLD-WAVE SIGNALS AND TEMPERATURE-FALL WARNINGS.

[Ordered by Assistant Professor T. Russell.]

Number of cold-wave signals ordered, 378; justified, 264. Percentage of justifications, 69.8. Number of temperature-fall warnings, 103. Percentage of justifications, 48.5. Percentage of justifications of cold-wave signals and temperature-fall warnings combined, 67.3.

Percentages of verifications of weather and temperature signals reported by directors of the various State Weather Services for February, 1891.

States.	Weather.	Tem- perature.	States.	Weather.	Tem- perature.
Illinois.....	86	89	New Jersey.....	88	88
Indiana.....	87	87	New York.....	85	86
Iowa.....	87	89	North and South Dakota....	84	88
Michigan.....	86	89	Ohio.....	92	91
Minnesota.....	85	77	Pennsylvania.....	88	88
Nebraska.....	82	82	South Carolina.....	90	87

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts and summaries are republished from reports for February, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—Maximum, 83, at Montgomery, 19th; minimum, 17, at Valley Head, 26th and 27th; greatest monthly range, 60, at Jasper; least monthly range, 48, at Chepultepec.

Precipitation.—Greatest monthly, 11.20, at Auburn; least monthly, 4.54, at Mobile.

Wind.—Prevailing direction, south.—Prof. P. H. Mell, Auburn, director; J. M. Quarles, Private, Signal Corps, assistant.

ARKANSAS.

Temperature.—The mean was 3.2 above the normal; maximum, 80, at Fort Smith, 24th; minimum, 6, at Fayetteville and Winslow, 26th; greatest monthly range, 69, at Fayetteville; least monthly range, 46, at Forrest City.

Precipitation.—The average was 2.08 below the normal; greatest monthly, 8.38, at Greenville, Miss.; least monthly, 0.75, at Fort Smith.

Wind.—Prevailing direction, south.—M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Sergeant, Signal Corps, assistant.

COLORADO.

Temperature.—The mean was 3.6 below the normal; maximum, 72, at Burlington, 26th, and at Rocky Ford, 23d; minimum, —46, at Breckenridge and Gunnison, 9th; greatest monthly range, 112, at Breckenridge; least monthly range, 40, at Watkins.

Precipitation.—The average was 0.50 above the normal; greatest monthly, 12.00 at Rico; least monthly, 0.00, at several stations.

Wind.—Prevailing direction, west.—W. S. Miller, Sergeant, Signal Corps, Denver, assistant.

ILLINOIS.

Temperature.—The mean was 1.4 above the normal; maximum, 72, at Rushville, 24th; minimum, —18, at Cockrell and Lanark, 4th.

Precipitation.—The average was 0.21 below the normal; greatest monthly, 5.68, at Palestine; least monthly, 0.89, at Davenport, Iowa.

Wind.—Prevailing direction, northwest.—John Craig, Sergeant, Signal Corps, Springfield, in charge.

INDIANA.

Temperature.—Maximum, 69, at De Gonia Springs, 20th; minimum, —12, at La Fayette, 4th; greatest monthly range, 73, at La Fayette; least monthly range, 56, at Muncie.

Precipitation.—Greatest monthly, 9.55, at Huntingburgh; least monthly, 1.95, at Valparaiso.

Wind.—Prevailing direction, northwest.—Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.

IOWA WEATHER AND CROP SERVICE.

Temperature.—Maximum, 70, at Keokuk, 24th; minimum, —31, at Cresco, 4th; greatest monthly range, 76, at Keokuk and Charles City; least monthly range, 50, at Alta.

Precipitation.—Greatest monthly, 2.41, at Manson; least monthly, 0.55, at Stilson.

Wind.—Prevailing direction, northwest.—J. R. Sage, Des Moines, director; G. M. Chappel, Sergeant, Signal Corps, assistant.

KANSAS.

Temperature.—The mean was below the normal in all counties except Sumner; maximum, 80, at Englewood, 23d; minimum, —10, at Seneca, 28th; greatest monthly range, 79, at Lakin; least monthly range, 56, at Manhattan.

Precipitation.—The average was in excess of the normal in the southeast part of the state, elsewhere it was below; greatest monthly, 2.72, at Marmaton; least monthly, trace, at Tribune.

Wind.—Prevailing direction, south.—Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.

KENTUCKY.

Temperature.—Maximum, 76, at Mount Sterling, 20th, and at Franklin 17th; minimum, 0 (zero), at Caddo, 4th; greatest monthly range, 67, at Caddo and Louisville; least monthly range, 51, at Canton.

Precipitation.—The average was about 1.25 above the normal; greatest monthly, 8.99, at Middlesborough; least monthly, 2.96, at Earlington.

Wind.—Prevailing direction, south.—Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.

LOUISIANA.

Temperature.—The mean was 4.3 above the normal in the northern section and 5.8 above in the southern; maximum, 85, at Cheneyville, 17th, 18th, 19th; minimum, 20, at Lake Charles, 9th; greatest monthly range, 60, at Liberty Hill; least monthly range, 45, at Shell Beach, Emilie, and Edgard.

Precipitation.—The average was greatly above the normal; greatest monthly, 15.15, at Emilie; least monthly, 2.73, at Shreveport.

Wind.—Prevailing direction, south.—George E. Hunt, Sergeant, Signal Corps, New Orleans, in charge.

MICHIGAN.

Temperature.—The mean varied from 2.1 above the normal in the northern section to 4.7 above in the central section; maximum, 59, at Benton Harbor, 24th; minimum, —28, at Hillman, 4th; greatest monthly range, 78, at Hillman; least monthly range, 36, at Atlantic.

Precipitation.—The average varied from 0.27 above the normal in the Upper Peninsula to 1.74 above in the central section; greatest monthly, 6.51, at Adrian; least monthly, 1.49, at Grand Rapids.

Wind.—Prevailing direction, west.—N. B. Conger, Sergeant, Signal Corps, Lansing, director.

MINNESOTA.

Temperature.—Maximum, 51, at Grand Meadow, 23d; minimum, —44, at Pine River, 28th; greatest monthly range, 81, at Pine River; least monthly range, 63, at Farmington.

Precipitation.—Greatest monthly, 2.35, at Saint Charles; least monthly, 1.08, at Alma City.

Wind.—Prevailing direction, northwest.—John Healy, Corporal, Signal Corps, Minneapolis, in charge.

MISSISSIPPI.

Temperature.—The mean was 4.9 above the normal; maximum, 86, at Vaiden, 19th; minimum, 20, at Louisville, 27th; greatest monthly range, 66, at Vaiden; least monthly range, 40, at Ship Island.

Precipitation.—The average was 1.77 above the normal; greatest monthly, 12.43, at Vaiden; least monthly, 2.04, at Bay Saint Louis.—R. B. Fulton, Signal Corps, University, director.

METEOROLOGICAL REPORT OF THE MISSOURI STATE BOARD OF AGRICULTURE.

Temperature.—The mean was about 2 below the normal; maximum, 78, at California, 24th; minimum, —13, at Pickering, 28th; greatest monthly range, 80, at Adrian; least monthly range, 44, at Dadeville.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 4.26, at Mine La Motte; least monthly, 1.20, at Austin and Bethany.—Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Sergeant, Signal Corps, assistant.

NEBRASKA.

Temperature.—The mean was 3.0 below the normal; maximum, 85, at Superior; minimum, —30, at Fort Niobrara.

Precipitation.—The northern part of the state with a strip along the Missouri river received more than 1.00 of rainfall, and the southern half of the state less.—Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Sergeant, Signal Corps, assistant.

NEVADA.

Temperature.—The mean was 0.5 below the normal; maximum, 66, at Yount's Ranch, 14th; minimum, —19, at Ely, 9th; greatest monthly range, 69, at Beowawe; least monthly range, 37, at Humboldt.

Precipitation.—The average was 1.14 above the normal; greatest monthly, 9.30, at Lewer's Ranch; least monthly, 0.80, at Candelaria.

Wind.—Prevailing direction, south.—Prof. Charles W. Friend, Carson City, director; D. C. Grunow, Corporal, Signal Corps, assistant.

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 3.4 above the normal; maximum, 63, at Lake Cochituate, 25th; minimum, —28, at West Milan, 5th; greatest monthly range, 80, at West Milan; least monthly range, 40, at Block Island.

Precipitation.—The average was 0.92 above the normal; greatest monthly, 7.30, at Lake Konomoe; least monthly, 1.01, at Burlington.

Wind.—Prevailing direction, northwest.—Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Private, Signal Corps, assistant.

NEW JERSEY.

Temperature.—The mean was 6.5 above the normal; maximum, 71, at Vine-land, 18th; minimum, 1, at Tenafly, 28th; greatest monthly range, 60, at Beverly; least monthly range, 42, at Deckertown (Pochuck Mountain).

Precipitation.—The average was 1.65 above the normal; greatest monthly, 7.20, at Egg Harbor City; least monthly, 3.70, at Junction.

Wind.—Prevailing direction, northwest.—E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.

NEW YORK.

Temperature.—Maximum, 65, at Brooklyn, 17th; minimum, —19, at Number Four, 5th; greatest monthly range, 67, at Potsdam; least monthly range, 43, at Buffalo.

Precipitation.—Greatest monthly, 8.24, at Constableville; least monthly, 1.52, at Lyons.

Wind.—Prevailing direction, southwest.—Prof. E. A. Fuytes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Harding, Private, Signal Corps, assistant.

NORTH CAROLINA.

Temperature.—The mean was 3 above the normal; maximum, 81, at Marshallberg, 25th; minimum, 4, at Highlands, 27th; greatest monthly range, 62, at Franklin; least monthly range, 38, at Hatteras and Southport.

Precipitation.—The average was 1.50 above the normal, and was the greatest rainfall reported since February, 1873; greatest monthly, 20.20, at Highlands; least monthly, 1.54, at Wilmington.

Wind.—Prevailing direction, southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Sergeant, Signal Corps, assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean was about 6.0 below the normal; maximum, 55, at Rapid City, S. Dak., 14th; minimum, —39, at Wahpeton, N. Dak., 28th; greatest monthly range, 93, at Wahpeton, N. Dak.; least monthly range, 55, at De Smet, S. Dak.

Precipitation.—The average was about 0.62 above the normal; greatest monthly, 2.45, at Webster, S. Dak.; least monthly, 55, at De Smet, S. Dak.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Sergeant, Signal Corps, Huron, S. Dak., in charge.*

OHIO.

Temperature.—The mean was 5.0 above the normal; maximum, 60, at Portsmouth, 20th, and is the highest maximum on record for February; minimum, —2, at Granville, 5th.

Precipitation.—The average was 0.97 above the normal; greatest monthly, 7.61, at Demos; least monthly, 2.91, at Wapakoneta.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Sergeant, Signal Corps, secretary and assistant.*

OREGON.

The characteristics of the month were the deficiency in temperature and the excess in precipitation and snowfall.

Temperature.—The mean was 2.7 below the normal; maximum, 59, at Gardiner, 10th; minimum, —11, at Baker City, 2d.

Precipitation.—The average was 1.78 above the normal; greatest monthly, 14.06, at Bandon; least monthly, 2.16, at Pendleton.

Wind.—Prevailing direction, southwest.—*Hon. H. E. Hayes, Master State Grange, Oswego, director; B. S. Pague, Sergeant, Signal Corps, assistant.*

PENNSYLVANIA.

Temperature.—The mean was 6.0 above the normal; maximum, 70, at Philadelphia, 18th; minimum, —7, at Dyberry, 5th; greatest monthly range, 63, at Somerset; least monthly range, 46, at Kennett Square, Nisbet, and Greenville.

Precipitation.—The average was slightly above the normal; greatest monthly, 8.29, at Ligonier; least monthly, 2.13, at Blue Knob.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 83, at Jacksonborough, 19th; minimum, 13, at Spartanburgh, 4th; greatest monthly range, 57, at Spartanburgh and Yorkville; least monthly range, 46, at Walhalla.

Precipitation.—Greatest monthly, 9.53, at Evergreen; least monthly, 0.99, at Charleston.

Wind.—Prevailing direction, southwest.—*A. P. Butler, director, State Weather Service, and observer, Signal Service.*

TENNESSEE.

Temperature.—The mean was 3.5 above the normal; maximum, 78, at Dare, 17th; minimum, 12, at Rugby, 4th; greatest monthly range, 64, at Hohenwald; least monthly range, 46, at McKenzie and Union City.

Precipitation.—The average was nearly 2.00 above the normal; greatest monthly, 11.24, at Rockwood; least monthly, 3.31, at Union City.

Wind.—Prevailing direction, south.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.*

TEXAS.

Temperature.—The mean was 2 to 4 above the normal along the coast and over the eastern part of the state, elsewhere it was normal; maximum, 97, at Rio Grande City, 24th; minimum, 4, at Coldwater, 27th; greatest monthly range, 75, at Childress; least monthly range, 45, at La Grange.

Precipitation.—Less than 50 per cent. of the average fell over the west part, and was very little more over other parts, except along the extreme east coast, and over a few localities where it was about 1.00 in excess; greatest monthly, 4.85, at Fort Worth; least monthly, 0.00, at a number of stations.—*D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.*

WISCONSIN.

Temperature.—The mean was 2.0 below the normal; maximum, 60, at Kenosha, 24th; minimum, —40, at Rhinelander, 28th.

Precipitation.—The average was about 2.00 below the normal; greatest monthly, 4.05, at Embarrass; least monthly, 0.69, at Delavan.

Wind.—Prevailing direction, west.—*R. E. Kerkam, Milwaukee, Sergeant, Signal Corps, in charge.*

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, February, 1891.

Stations.	Temperature. (Fahrenheit.)			Precip. Ins.	Stations.	Temperature. (Fahrenheit.)			Precip. Ins.
	Max.	Min.	Mean.			Max.	Min.	Mean.	
Alabama.	0	0	0	Ins.	California—Cont'd.	0	0	0	Ins.
Bermuda *†.....	80	25	58.6	8.97	Almaden.....	64	31	50.2	12.01
Bessemer.....	80	23	53.6	10.10	Anaheim.....	72	45	53.3	9.05
Brewton.....	81	25	50.5	5.61	Anderson.....	66	30	46.0	13.01
Chepultepec.....	80	32	49.6	7.78	Angel Island.....	68	36	49.5	7.57
Citronelle.....	82	24	61.8	8.20	Antioch.....	64	39	52.7	4.55
Columbiana†.....	80	18	55.2	8.31	Aptos.....	62	28	49.7	13.16
Cordova†.....	.....	.....	8.20	.....	Athlone.....	73	30	50.7	2.46
Decatur (1)†.....	.....	.....	9.36	.....	Bakersfield.....	71	29	52.3	1.30
Double Springs†.....	74	19	53.0	10.36	Barstow.....	72	20	47.9	2.47
Gadsden.....	.....	.....	9.64	.....	Beaumont.....	70	30	47.3	8.70
Greensborough.....	78	24	57.0	8.15	Belmont.....	61	30	51.6	.....
Jasper.....	78	18	50.9	8.72	Benicia Barracks.....	63	32	48.2	7.81
Livingston (1) *.....	80	24	54.9	6.68	Berendo *.....	65	30	49.5	2.44
Mountain Home.....	77	15	48.8	10.15	Berkeley.....	63	35	49.4	10.68
Mt. Vernon B'ks.....	81	23	57.2	13.73	Bishop Creek.....	61	17	41.7	3.70
Talladega.....	.....	.....	10.13	.....	Boca.....	56	12	38.0	11.80
Tuscumbia (1).....	77	22	50.2	9.30	Borden *.....	68	32	47.3	2.48
Uniontown.....	79	24	55.6	9.91	Boulder Creek.....	68	24	49.0	34.03
Valley Head†.....	76	17	47.9	9.58	Brentwood.....	61	30	48.6	4.03
Alaska.	45	7	27.4	2.68	Brighton.....	69	27	49.0	4.64
Juneau.....	39	2	21.9	2.70	Byron.....	64	30	50.2	4.73
Arizona.	.....	.....	.....	.....	Calistoga.....	66	24	48.2	13.54
Antelope Valley.....	77	28	52.7	9.29	Campo.....	.....	.....	12.50	.....
Ariz. Canal Co. Dam.....	77	22	45.6	5.11	Castroville *.....	68	34	52.9	5.89
Ash Canyon.....	67	30	50.2	1.31	Centerville *.....	72	38	53.5	4.72
Benson *.....	73	30	50.2	1.31	Chico *.....	68	30	48.5	8.76
Buckeye.....	.....	.....	0.47	.....	Cisco.....	39	12	27.0	11.88
Calabasas.....	.....	.....	1.58	.....	Colfax.....	60	32	44.1	14.60
Casa Grande *.....	70	34	54.7	1.90	Colton *.....	70	30	45.8	6.48
Chino.....	66	10	37.8	2.30	Crescent City.....	.....	.....	30.55	.....
Chiri Cahua M't's.....	63	16	42.0	1.33	Davisville.....	70	33	50.6	10.55
Chloride.....	49†	1†	31.5†	9.45†	Delano *.....	69	32	49.1	1.99
Cooleys.....	.....	.....	6.00	.....	Delta *.....	62	23	42.2	13.70
Cottonwood.....	.....	.....	2.18	.....	Downey *.....	70	34	53.4	9.39
Dragon *.....	70	30	45.0	1.99	Dunnigan.....	59	29	45.7	9.00
Dragon Summit *.....	.....	.....	2.16	.....	Dunsmuir.....	50	27	38.3	2.59
Dos Cabezos†.....	.....	.....	3.85	.....	El Dorado *.....	66	29	44.7	6.93
Eagle Pass.....	.....	.....	11.15	.....	Elmira.....	72	32	50.3	8.87
Farley's Camp.....	85	22	50.4	4.99	El Verano.....	65	28	48.6	9.56
Florence.....	62	10	39.1	4.10	Emigrant Gap *.....	45	18	31.7	.....
Fort Apache.....	66	20	40.4	2.18	Esparto *.....	62	33	49.3	11.09
Fort Bowie.....	67	19	44.5	3.78	Evergreen.....	.....	.....	4.57	.....
Fort Grant.....	58	21	41.3	1.80	Farmington.....	65	29	49.3	6.35
Fort Huachuca.....	67	18	51.6	3.05	Felton.....	68	21	48.6	21.69
Fort Lowell.....	70	40	55.4	2.60	Fernando *.....	72	32	50.2	6.32
Gila Bend (1) *.....	75	36	53.3	2.43	Florence.....	74	29	54.6	8.00
Gila Bend (2) *.....	67	6	38.4	1.78	Folsom *.....	71	31	50.3	4.56
Grand Central Mill.....	63	45	53.0	2.33	Fort Bidwell.....	46	1	28.6	3.98
Holbrook†.....	.....	.....	4.00	.....	Fort Gaston.....	58	23	41.8	14.26
Maricopa (1) *.....	67	6	38.4	1.78	Fort Mason.....	63	37	49.4	9.42
Maricopa (2) *.....	63	45	53.0	2.33	Fresno *.....	70	32	50.1	2.03
Natural Bridge†.....	.....	.....	4.35	.....	Fruto *.....	61	30	44.8	9.35
Oro.....	.....	.....	3.50	.....	Georgetown.....	55	24	40.2	10.39
Pantano *.....	75	28	49.5	1.88	Gilroy *.....	62	33	49.3	6.76
Payson.....	.....	.....	7.85	.....	Girard *.....	61	23	39.8	7.00
Red Rock.....	.....	.....	2.00	.....	Goshen *.....	68	26	47.8	1.71
San Carlos.....	79	16	48.7	5.25	Grass Valley.....	.....	.....	13.70	.....
Show Low†.....	.....	.....	3.00	.....	Haywards *.....	60	32	47.6	8.28
Signal†.....	71	25	48.4	4.87	Hollister *.....	75	26	52.3	3.22
Strawberry.....	.....	.....	7.63	.....	Hornbrook *.....	57	13	37.8	2.99
Tevison.....	.....	.....	5.25	.....	Hydesville.....	66	34	43.8	9.91
Texas Hill *.....	73	22	51.0	2.50	Indio.....	68	28	57.6	1.90
Tip Top†.....	.....	.....	13.30	.....	Ione.....	65	25	46.4	2.30
Tucson (1)†.....	74	23	50.6	3.28	Iowa Hill *.....	59	29	41.5	10.52
Tucson (2) *.....	67	31	52.5	2.08	Jolon.....	.....	.....	8.75	.....
Whipple Barracks.....	65	7	36.2	5.96	Julian.....	64	28	42.2	19.32
Wilcox.....	75	18	46.9	2.45	Keeler.....	68	28	41.0	.....
Wilcox.....	.....	.....	1.70	.....	Keene *.....	63	31	43.7	6.59
Wood Canyon.....	.....	.....	3.50	.....	Kingsburgh *.....	62	40	51.0	1.49
Woodruff.....	.....	.....	2.00	.....	King City *.....	68	22	48.8	4.77
Arkansas.	.....	.....	.....	.....	Knight's Landing *.....	64	34	48.8	9.40
Arkansas City†.....	72	24	44.5	1.96	Lathrop *.....	71	30	51.7	2.80
Brinkley.....	79	25	51.6	4.60	Laurel.....	61	27	43.8	28.95
Camden.....	72	25	46.2	3.79	Lemoore.....	70	24	51.0	1.36
Conway.....	76	15	45.6	1.94	Livermore.....	70	28	49.1	4.18
Dardanelle.....	.....	.....	1.82	.....	Livingston *.....	71	25	49.0	3.16
Devall's Bluff.....	77	18	48.0	2.77	Long Beach *.....	78	32	51.3	.....
Fayetteville *.....	75	6	39.5	1.12	Los Angeles *.....	70	33	52.1	9.24
Fayetteville†.....	76	30	53.5	2.60	Los Banos *.....	64	30	49.4	2.17
Fulton.....	.....	.....	1.54	.....	Los Gatos (1) *.....	65	28	51.1	16.65
Harrisburgh.....	72	20	44.4	3.30	Los Gatos (2) *.....	63	32	48.0	17.50
Helena (1)†.....	.....	.....	4.49	.....	Mammoth Tank.....	72	31	53.2	2.73
Helena (2).....	74	31	47.2	4.57	Martinez *.....	60	30	45.1	6.58
Hot Springs.....	76	17	47.4	4.29	Milton (near).....	62	34	49.2	2.71
Lead Hill *.....	76	14	41.4	1.60	Marysville *.....	70	28	50.2	8.68
Lonoke.....	73	24	50.0	1.90	Menlo Park *.....	62	32	51.4	7.02
Malvern.....	79	28	53.0	1.30†	Merced *.....	75	33	47.5	2.23
Mount Nebo.....	70	12	43.5	1.69	Modesto *.....	72	28	51.6	1.91
Newport (1)†.....	.....	.....	4.10	.....	Mojave *.....	68	19	45.0	2.33
Newport (2).....	.....	.....	3.08	.....	Monson *.....	69	27	48.4	1.80
Oseola.....	72	23	47.0	3.14	Montague *.....	58	26	36.0	2.33
Osceola.....	69	14	41.7	1.50	Monterey *.....	66	46	49.5	3.68
Paragould.....	.....	.....	2.07	.....	Monterey (Hotel del Monte).....	65	32	52.3	.....
Pine Bluff.....	78	20	49.4	1.94	Mullans.....	68	27	47.0	7.77
Rogers.....	75	9	40.6	2.20	Napa City *.....	68	31	50.8	8.77
Stuttgart.....	77	22	48.4	2.62	National City *.....	71	33	52.9	5.33
Texarkana.....	70	19	44.1	6.47	Newark *.....	63	35	51.7	5.02
Winslow.....	73	6	39.2	1.59	Newhall *.....	70	24	49.7	9.99
California.	.....	.....	.....	.....	Newman *.....	68	38	52.3	3.27
Alameda.....	65	30	49.6	5.17	Niles *.....	71	34	57.8	8.09
Alcatraz Island.....	65	35	49.1	7.35	Norwalk *.....	71	32	55.1	11.37

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>California—Cont'd.</i>	o	o	o	<i>Ins.</i>	<i>Colorado—Cont'd.</i>	o	o	o	<i>Ins.</i>
Oakland (2).....	62	32	47.0	9.60	Crook.....	48	12	17.9	1.24
Orland.....	68	39	47.8	7.88	Deer Trail.....	34	10	21.1	0.45
Oroville.....	65	37	47.8	9.04	Delta.....	30	8	27.0	0.24
Palermo.....	67	27	47.2	10.63	Dillon.....	.....	.....	.....	.....
Pajaro.....	70	26	49.5	7.46	Eagle Farm.....	.....	.....	.....	.....
Paso Robles.....	62	22	46.3	8.20	Elkhorn.....	.....	.....	.....	.....
Petaluma.....	70	30	49.5	9.13	First View.....	46	7	19.8	0.10
Placerville (1).....	61	26	48.1	9.29	Fort Collins.....	46	15	20.6	0.17
Placerville (2).....	62	26	44.0	9.76	Fort Lewis.....	46	15	20.6	0.10
Pomona.....	62	33	52.9	9.76	Fort Logan.....	36	9	26.8	0.20
Porterville.....	70	34	50.5	2.43	Fruit.....	34	7	27.4	1.48
Presidio of San F.....	72	34	50.0	9.50	Greenhorn.....	39	12	28.9	0.06
Puerto.....	62	27	45.3	12.05	Gunnison.....	.....	.....	.....	.....
Ravena.....	62	27	45.3	7.20	Hugo.....	62	8	26.8	1.70
Red Bluff.....	70	32	48.1	9.35	Husted.....	65	10	29.6	0.03
Redding.....	62	26	45.0	9.95	Idaho Springs.....	60	4	27.8	0.03
Riverside.....	70	26	48.0	5.92	Julesburg.....	46	14	14.6	0.50
Rocklin.....	66	33	50.0	6.43	Kirk.....	68	6	28.8	0.25
Rumsey.....	67	27	49.9	13.60	Kit Carson.....	68	6	28.8	0.11
Sacramento (1).....	66	22	43.6	7.62	Lamar.....	63	2	28.8	0.00
Sacramento (2).....	66	27	49.1	4.62	La Porte.....	63	2	28.8	0.07
Salinas (1).....	66	31	48.4	4.40	Las Animas.....	65	5	30.0	0.00
Salinas (2).....	62	32	47.1	4.28	Lay.....	.....	.....	.....	.....
Salton.....	75	28	53.3	1.87	Leadville.....	45	15	17.8	4.75
Sanger Junction.....	70	29	54.1	3.41	Le Roy.....	36	11	19.2	1.00
San Ardo.....	69	23	47.3	3.99	Livermore.....	52	8	23.9	0.09
San Diego B'ks.....	72	33	54.3	3.04	Longmont.....	55	17	23.0	0.03
San Gabriel.....	68	34	51.2	11.26	Magnolia.....	42	13	20.9	0.55
San Jose.....	65	31	51.3	5.27	Meeker.....	51	27	20.5	1.21
San Mateo.....	60	32	50.3	9.06	Minneapolis.....	.....	.....	.....	.....
San Miguel.....	65	26	46.8	5.20	Monte Vista (1).....	45	19	15.7	0.41
San Pedro.....	69	40	54.0	6.81	Monte Vista (2).....	44	18	17.6	0.38
Santa Ana.....	72	34	52.0	8.70	Montrose (near).....	.....	.....	.....	.....
Santa Barbara (1).....	70	30	52.6	7.92	Moraine.....	42	4	22.0	3.00
Santa Barbara (2).....	68	38	53.4	8.82	Pagoda (near).....	51	27	21.6	0.19
Santa Clara.....	64	31	.....	6.55	Palmer Lake.....	61	9	27.6	0.10
Santa Cruz (1).....	71	33	54.5	9.58	Parachute.....	.....	.....	.....	.....
Santa Cruz (2).....	62	30	50.6	10.68	Red Cliff.....	36	18	16.5	12.00
Santa Margarita.....	59	17	40.7	10.96	River Bend.....	64	0	26.8	.....
Santa Maria.....	68	28	48.7	3.57	Rocky Ford.....	72	8	30.6	.....
Santa Monica.....	66	30	53.4	11.61	Saint Cloud.....	.....	.....	.....	.....
Santa Paula.....	66	32	53.0	8.73	Sanborn.....	.....	.....	.....	.....
Santa Rosa.....	62	30	47.0	10.49	San Luis.....	46	32	22.8	1.28
Selma.....	66	28	48.2	2.20	Sedwick.....	.....	.....	.....	.....
Seven Palms.....	77	38	53.6	7.44	Sheridan Lake.....	67	1	28.0	0.05
Shingle Springs.....	65	29	45.2	7.65	Smoky Hill Mine.....	.....	.....	.....	.....
Sims.....	59	20	38.5	18.20	Stamford.....	.....	.....	.....	.....
Sisson.....	49	13	32.8	7.17	Stunner.....	.....	.....	.....	.....
Soledad.....	64	26	50.0	2.43	T. S. Ranch.....	54	5	28.6	0.85
Sonoma.....	62	30	49.2	10.03	Thon.....	62	9	28.7	.....
Soquel.....	68	39	54.4	.....	Vilas.....	.....	.....	.....	.....
South Vallejo.....	65	35	48.2	6.73	Villa Grove.....	.....	.....	.....	.....
Spadra.....	70	29	53.3	8.70	Waterville.....	40	0	15.4	0.22
Stearns.....	62	35	50.3	7.14	Watkins.....	.....	.....	.....	.....
Stockton (2).....	60	28	47.4	3.19	Wray.....	.....	.....	.....	.....
Summit.....	46	15	25.6	1.38	Yuma.....	.....	.....	.....	.....
Suisun City.....	69	36	51.6	8.99					
Susanville.....	50	8	30.8	7.84					
Tehachapi.....	59	14	36.7	3.45					
Tehama.....	72	33	47.7	9.00					
Templeton.....	62	24	47.6	7.70					
Towles.....	54	18	36.9	14.65					
Tracy.....	68	30	52.8	1.75					
Traver.....	66	32	49.7	3.10					
Tropic.....	79	34	51.4	7.84					
Truckee (1).....	47	6	27.8	8.36					
Truckee (2).....	54	15	34.5	.....				
Tulare.....	72	32	50.0	1.75					
Turlock.....	67	31	50.4	3.13					
Upper Mattole.....	76	29	47.8	17.18					
Vacaville (1).....	64	33	48.6	12.93					
Vacaville (2).....	69	34	51.1	9.28					
Valley Springs.....	63	33	47.9	3.15					
Vina.....	61	31	46.4	9.29					
Volcano Springs.....	84	30	57.4	2.62					
Volta.....	65	26	49.8	2.17					
Walla Walla Ck.....	50	16	34.6	6.13					
Walnut Creek.....	66	33	49.6	8.59					
Westley.....	69	30	54.1	2.27					
Wheatland.....	63	24	46.8	5.72					
Williams.....	61	30	46.3	9.62					
Willow (1).....	66	29	45.0	7.87					
Willow (2).....	68	30	43.0	9.03					
Winters.....	68	32	49.4	13.52					
Yreka.....	58	17	35.7	3.59					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Georgia—Cont'd.</i>					<i>Indian Territory.</i>				
Elberton.....	o	o	o	<i>Ins.</i>	Euola.....	o	o	o	<i>Ins.</i>
Forrest.....	82	24	56.9	8.11	Fort Supply.....	84	7	37.1	0.60
Fort McPherson.....	70	15	47.2	9.20	Headton.....	74	36	46.8	0.11
Gillsville.....	74	27	50.9	0.19	Tulsa.....	.....	.....	.....	1.05
Hephzibah.....	70	28	58.2	0.24	Woodward.....	.....	.....	.....	0.87
Lithia Springs.....	80	26	53.0	6.44	Wynne Wood.....	73	13	40.2	0.30
Marietta.....	84	25	56.9	4.61	<i>Iowa.</i>				
Milledgeville.....	78	19	49.0	9.93	Alta (1).....	42	18	13.2	1.37
Point Peter.....	79	24	56.3	5.76	Alta (2).....	41	14	14.4	1.37
Poulan.....	82	22	49.8	8.15	Amasa.....	59	10	22.8	1.25
Quitman (1).....	83	26	59.2	3.26	Ames.....	49	12	19.0	1.06
<i>Idaho.</i>					Atlantic.....	53	20	21.3	1.66
American Falls.....	42	19	21.6	2.54	Bancroft.....	45	27	10.2	2.06
Boise Barracks.....	53	2	28.2	2.96	Belle Plaine.....	50	10	22.0	0.89
Era.....	45	14	19.5	3.97	Carroll.....	51	17	15.6	1.09
Fort Sherman.....	43	3	26.3	4.32	Carson.....	50	14	19.5	1.48
Henry's Lake.....	48	34	12.6	4.29	Cedar Falls.....	.....	22	15.8	1.17
Kootenai.....	41	8	21.4	4.40	Cedar Rapids.....	62	10	23.6	1.13
Lewiston.....	48	13	31.7	1.30	Charles City.....	58	18	14.0	1.38
Mullan.....	48	0	23.2	.....	Clarinda.....	54	10	22.4	1.16
Payette.....	50	2	26.2	1.03	Clinton.....	67	10	25.2	1.42
Placerville.....	54	2	26.7	6.32	Concord.....	.....	.....	.....	1.07
Ruthburg.....	47	11	25.5	3.74	Cresco.....	43	31	12.6	1.49
<i>Illinois.</i>					Dallas Centre.....	40	14	16.5	0.60
Alton.....	.....	.....	.....	2.09	Des Moines.....	56	13	22.0	0.45
Atwood.....	58	10	28.1	1.47	Fayette.....	50	15	17.8	1.39
Aurora (1).....	58	10	26.2	2.28	Fort Madison.....	69	4	39.6	1.35
Aurora (2).....	59	7	27.5	2.82	Glenwood (1).....	58	14	21.2	0.57
Beardstown.....	.....	.....	.....	3.35	Greenfield.....	54	14	20.6	1.65
Beason.....	63	4	31.1	4.51	Grinnell.....	54	12	22.0	0.60
Belvidere.....	58	8	26.1	1.61	Hampton.....	44	18	13.0	1.62
Carlinville.....	68	0	31.2	1.93	Hopeville.....	50	12	23.4	0.87
Centralia.....	66	0	34.0	3.40	Humboldt.....	45	26	13.4	1.28
Charleston.....	60	6	32.9	2.82	Independence.....	46	11	20.4	0.79
Collinsville.....	68	4	35.4	2.78	Indianola.....	55	14	23.2	0.51
Cockrell.....	61	13	25.2	.....	Iowa City.....	63	9	26.7	1.30
East Peoria.....	70	2	32.0	2.25	Larrabee.....	42	23	9.8	1.07
Flora.....	64	0	36.0	5.24	Le Claire.....	.....	.....	.....	1.50
Fort Sheridan.....	58	5	28.2	2.25	Logan.....	53	15	18.7	1.60
Galesburg.....	66	12	40.4	3.50	Manson.....	42	16	12.2	2.41
Greenville.....	64	2	33.9	3.04	Marshalltown.....	58	15	30.5	1.09
Griggsville.....	66	0	32.2	3.52	Maquoketa.....	60	10	24.3	1.11
Hennepin.....	66	6	28.2	1.35	McCauley.....	62	2	27.0	1.29
Irishtown.....	.....	.....	.....	3.75	Monticello.....	58	15	31.6	0.86
Jordan's Grove.....	66	5	35.5	5.22	Mount Pleasant.....	62	6	36.5	1.20
Lacon.....	64	5	28.8	2.31	Mount Vernon.....	63	12	22.6	.....
Lanark.....	57	13	23.0	1.48	Muscataine (2).....	58	5	25.9	2.19
Louisville.....	63	3	34.3	5.15	Osage.....	41	22	11.5	1.37
Martinsville.....	60	6	35.1	4.67	Oskaloosa (1).....	54	14	24.0	0.28
Mascoutah.....	67	3	34.4	3.18	Panama.....	50	11	19.4	0.87
Mattoon.....	58	7	39.17	2.97	Sac City.....	45	22	11.2	1.00
Mount Carmel.....	.....	.....	.....	6.04	Stilson.....	41	24	12.6	0.55
Olney (1).....	63	3	37.5	5.48	Storm Lake.....	40	20	13.1	1.02
Olney (2).....	60	3	35.6	5.34	Tipton.....	63	8	25.1	1.05
Oswego.....	58	10	26.8	2.32	Vinton.....	48	11	20.1	0.87
Ottawa.....	66	6	28.8	2.28	Washington.....	62	7	26.9	0.86
Palatine.....	62	0	35.2	5.68	Webster City.....	46	14	15.3	0.76
Pana.....	63	1	36.7	2.64	West Bend.....	46	22	10.5	1.75
Peoria (1).....	.....	.....	.....	2.44	Williams.....	43	15	.....	0.70
Peoria (2).....	68	4	31.8	1.90	<i>Kansas.</i>				
Philo.....	60	10	31.9	2.10	Abilene.....	64	0	26.9	1.05
Pontiac.....	62	4	31.9	2.45	Allison.....	58	5	22.3	0.08
Riley.....	58	10	25.1	1.65	Alton.....	67	0	28.2	0.95
Rockford.....	59	10	25.4	1.65	Altoona.....	.....	.....	.....	2.50
Rock Island Arsenal.....	62	9	27.4	1.01	Bucklin.....	.....	.....	.....	0.50
Rushville.....	72	2	28.8	2.09	Buffalo Park.....	68	.....	.....	0.35
Sandwich.....	60	3	29.0	4.13	Burr Oak.....	59	3	.....	0.68
South Evanston.....	52	3	.....	2.93	Cawker City.....	60	0	24.7	1.00
Sycamore.....	58	8	26.1	1.60	Collyer.....	73	2	.....	0.08
Warsaw.....	.....	.....	.....	1.40	Columbia.....	.....	.....	.....	1.90
White Hall.....	70	0	32.6	2.72	Concordia.....	60	6	24.8	0.69
Winnebago.....	62	10	25.3	1.55	Cunningham.....	73	0	28.5	0.68
<i>Indiana.</i>					Downs.....	.....	.....	.....	0.77
Angola.....	54	5	29.0	5.11	Elco.....	72	0	31.6	2.02
Butterville.....	64	0	36.3	6.85	Elk Falls.....	75	5	35.8	1.44
Cannelton.....	67	9	37.9	4.25	Ellis.....	70	1	30.0	0.04
Columbia City.....	55	6	31.2	3.38	Emporia.....	67	2	31.4	1.87
Columbus.....	64	2	36.6	5.00	Englewood.....	80	7	35.4	0.26
Connersville.....	63	1	37.2	5.41	Eureka Ranch.....	73	4	29.2	0.35
Crandall.....	64	5	37.5	6.00	Ft. Leavenworth (1).....	66	3	30.0	1.95
De Gonia Springs.....	69	9	40.2	4.07	Ft. Leavenworth (2).....	58	4	27.5	1.10
Delphi.....	59	8	30.8	2.67	Fort Riley.....	66	2	26.8	0.00
Farmland.....	60	0	37.2	4.55	Fremont.....	71	6	27.6	0.18
Franklin.....	60	1	35.3	5.07	Globe.....	64	0	26.2	2.11
Huntingburg.....	63	4	39.0	9.55	Gove City.....	73	0	27.0	0.31
Huntington.....	.....	.....	.....	2.72	Grenola.....	76	3	31.6	1.70
Jeffersonville.....	71	8	41.2	3.75	Grinnell.....	72	0	29.4	0.05
La Fayette.....	61	12	33.9	2.48	Halstead.....	68	2	30.3	1.24
Logansport (2).....	56	5	34.2	2.65	Havensville.....	.....	.....	.....	0.50
Marengo.....	72	11	42.6	5.21	Horton.....	78	4	27.7	0.97
Mauzy.....	60	3	32.4	5.88	Hoxie.....	52	0	27.2	0.19
Mount Vernon (1).....	66	9	35.6	3.89	Hutchinson.....	.....	.....	.....	1.24
Mount Vernon (2).....	66	9	35.6	3.28	Independence.....	78	4	35.2	2.25
Muncie.....	60	4	37.0	4.39	Kansas City.....	69	3	39.6	1.46
Point Isabel.....	57	9	32.8	4.95	Kingman.....	.....	.....	.....	1.30
Princeton.....	64	4	37.6	4.50	Kirwin.....	.....	.....	.....	0.20
Rockville.....	59	5	35.8	3.49	La Crosse.....	75	0	31.2	0.77
Rushville.....	63	3	36.5	5.50	La Harpe.....	.....	7	30.5	2.30
Seymour.....	69	0	34.5	6.33	Lakin.....	77	2	29.8	0.10
Shelbyville.....	53	3	39.2	1.95	Lawrence.....	68	1	29.4	1.98
Valparaiso.....	57	9	39.2	3.89	Lobo.....	71	0	30.4	2.11
Vevay.....	75	3	40.5	3.89	Leoti.....	74	1	27.9	0.08
Vincennes.....	.....	.....	.....	6.74	Macksville.....	.....	.....	.....	0.50
Worthington.....	60	0	35.5	5.65	Manhattan (1).....	.....	.....	.....	1.02
					Manhattan (2).....	68	0	27.6	0.84

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
Kansas—Cont'd.	°	°	°	Ins.	Maine—Cont'd.	°	°	°	Ins.
Manhattan (3)*.....	58	2	27.4	1.11	Lewiston.....	51	8	22.7	3.86
Mankato.....	61	4	25.3	0.60	Orono.....	47	17	22.2	2.90
Marmaton.....	72	2	33.8	2.72	Petit Menan.....	40	5	25.6	
McAllister.....	62	4			West Jonesport.....	42	3	27.0	
McPherson.....	60	2	27.2	1.17	Maryland.				
Minneapolis.....	65	2	27.2	0.72	Barren Creek Sp'gs.....	74	14	43.1	6.50
Monument.....	65	4	26.4	0.22	Cumberland (1).....	68	12	38.0	3.99
Morse.....	69	4	29.2	1.50	Cumberland (2).....	72	16	42.0	2.86
Oberlin.....	69	4	29.2	0.05	Fallston.....	69	13	38.3	5.81
Ogallah.....	70	4	29.2	0.05	Fort McHenry.....	69	15	40.6	4.81
Oswego.....	77	5	36.6	2.07	Frederick.....	72	16	42.0	3.95
Page City.....	69	2	24.7		Gaithersburg.....	72	14	35.8	
Plainville.....	65	2	30.1	0.05	McDonogh.....	69	11	39.2	3.33
Pleasant Dale.....	73	2	28.6	1.00	Mt. St. Mary's Col.....	64	14	39.1	5.33
Quinter.....	66	4	27.4	0.05	Taneytown.....	64	14	39.1	5.33
Rome.....	74	6	33.9	2.06	Woodstock.....	68	10	38.7	4.60
Salina.....	63	4	28.4		Massachusetts.				
Scott City.....	76	0	35.4	0.15	Amherst.....	58	5	29.4	4.07
Sedan.....	77	3	33.9	1.60	Amherst ExSta (1).....	58	6	27.5	3.84
Seneca.....	60	10	23.9	1.11	Amherst ExSta (2).....	54	6	29.7	4.23
Sharon Springs.....	70	3	26.7	0.20	Andover.....	59	3	28.5	3.91
Shields.....	79	0	37.4	0.11	Ashland.....	59	3	28.5	3.91
Spearville.....	76	1	29.6	0.45	Blue Hill (sum't).....	57	0	29.9	5.01
Springvale.....	76	2	33.2	0.75	Blue Hill (base).....	60	1	31.2	5.39
Stafford.....	70	10	40.0	0.58	Blue Hill (valley).....	58	3	30.7	4.97
Tribune.....	71	2	28.4		Boston.....	59	1	29.2	4.56
Wakefield.....	65	0	29.3	0.44	Cambridge (1).....	59	1	29.2	4.56
Wa Keeney.....	69	0	27.2	0.22	Cambridge (2).....	61	3	30.2	4.61
Wallace (1).....	64	0	27.8	0.35	Chestnut Hill.....	62	2	31.4	5.29
Wallace (2).....	64	0	27.8	0.35	Chicopee.....	61	1	27.2	4.78
Wellington.....	75	6	34.7	2.05	Clinton.....	60	1	27.2	4.78
Weskan.....	64	3	26.5	0.10	Concord.....	60	1	27.2	4.78
Yates Centre.....	70	2	28.4	2.07	Cotuit.....	51	6	32.4	5.75
Kentucky.					Deerfield.....	49	7	27.5	
Bowling Green.....	70	2	28.4	7.61	Dudley.....	49	1	28.9	4.39
Burkesville.....	70	2	28.4	4.41	Fall River (1)*.....	60	7	33.4	6.22
Burnside.....	70	2	28.4	9.15	Fiskdale.....	54	4	27.5	4.16
Caddo.....	67	0	40.7	3.79	Fitchburg (1).....	54	4	27.5	4.16
Caldwell.....	67	0	40.7	7.54	Fitchburg (2).....	56	4	27.1	4.59
Cattlettsburg.....	69	18	43.9	4.76	Florida.....	47	8	23.6	4.82
Canton.....	69	15	43.9	4.76	Fort Warren.....	64	4	32.8	4.48
Central City.....	83	17	46.0	4.23	Framingham.....	62	1	31.1	5.12
Earlington.....	73	19	45.0	2.96	Gilbertville.....	56	1	28.4	3.30
Edmonton.....	70	18	43.3	6.84	Groton (1).....	56	3	29.0	4.08
Falmouth (1).....	73	19	45.0	2.96	Groton (2).....	56	3	29.0	4.08
Frankfort (1).....	75	8	41.2	3.97	Heath.....	52	12	24.8	
Frankfort (2).....	75	8	41.2	3.97	Kendall Green.....	52	0	30.8	5.18
Franklin.....	70	20	44.5	6.80	Lake Cochituate.....	63	5	30.2	5.02
Greensburg.....	74	11	41.6	6.80	Lawrence.....	55	2	28.5	4.55
Harrodsburg.....	74	11	41.6	6.80	Leicester.....	56	2	27.0	4.24
Louisville.....	71	17	45.6	8.99	Leominster.....	56	2	27.0	4.24
Middlesboro.....	71	17	45.6	8.99	Long Plain.....	52	5	32.0	7.16
Mount Sterling.....	76	10	41.2	4.17	Lowell (1).....	58	2	28.6	4.83
Newport Barracks.....	72	5	40.5	3.42	Lowell (2).....	59	4	28.6	
Paducah.....	73	9	39.0	6.59	Lowell (3).....	60	3	29.4	
Pellville.....	73	9	39.0	3.41	Ludlow (1).....	53	4	26.8	4.70
Princeton.....	69	9	41.4	3.50	Ludlow (2).....	56	1	30.4	4.30
Richmond.....	71	10	42.2	4.45	Lynn.....	56	0	28.8	5.12
Shelbyville.....	74	8	40.4	3.83	Mansfield.....	61	1	31.2	6.61
Williamsburg.....	74	8	40.4	4.97	Medford.....	60	5	32.5	5.69
Louisiana.					Middleborough.....	60	5	32.5	5.69
Abbeville.....	78	32	61.6	7.45	Milton.....	62	4	32.5	5.34
Alexandria.....	78	32	61.6	11.58	Monson.....	54	3	28.0	5.38
Audubon Park.....	78	32	61.6	11.58	Mount Nonotuck.....	54	3	28.0	5.38
Baton Rouge.....	82	30	61.5	7.50	Mystic Lake.....	54	3	28.0	5.38
Cameron.....	82	27	61.3	5.34	Mystic Station.....	54	3	28.0	5.38
Cheneyville.....	85	30	61.9	5.92	Nahant.....	55	5	31.7	
Clinton.....	80	33	61.2	7.76	New Bedford (1).....	53	4	32.6	7.01
Coushatta (1).....	78	30	60.1	8.79	New Bedford (2).....	56	5	33.9	5.78
Crowley.....	78	30	60.1	8.79	Newburyport (1).....	59	0	30.8	4.83
Davis.....	78	32	64.5	5.54	Northampton.....	53	0	28.5	4.47
Delhi.....	83	38	63.4	14.06	North Billerica.....	63	0	30.9	3.15
Edgard.....	78	38	63.4	14.06	Plymouth.....	61	6	35.2	5.32
Emilie.....	78	38	63.4	14.06	Provincetown.....	49	8	33.1	4.54
Farmerville.....	79	26	51.7	6.97	Randolph.....	50	0	30.2	5.24
Girard.....	80	23	53.5	4.15	Roberts' Dam.....	50	0	30.2	5.24
Grand Cane.....	78	32	61.8	8.42	Royalton.....	50	0	30.2	5.24
Grand Coteau.....	76	27	53.6	3.51	Salem (2).....	64	5	34.7	7.09
Homer.....	82	33	63.5	9.76	Somerset.....	55	0	29.4	4.34
Houma.....	81	34	61.5	8.28	South Hingham.....	55	0	29.4	4.34
Jackson Barracks.....	82	33	63.5	9.76	Springfield Arm'y.....	55	0	29.4	4.34
Jeanerette.....	81	34	61.5	8.28	Taunton (1).....	61	6	33.4	5.67
Lafayette.....	80	29	61.7	9.22	Taunton (2).....	61	6	33.4	5.67
Lake Charles.....	78	20	56.2	8.10	Taunton (3).....	62	4	32.6	5.82
Liberty Hill.....	82	22	54.6	5.33	Taunton (4).....	61	3	30.8	5.37
Luling.....	80	27	60.1	13.03	Wakefield.....	61	0	29.7	4.60
Mandeville.....	80	27	60.1	13.03	Waltham.....	61	0	29.7	4.60
Marksville.....	80	28	55.8	5.30	Wellesley.....	53	0	31.1	6.45
Maurepas.....	81	30	61.5	10.39	Westborough.....	55	1	30.8	4.21
Melville.....	81	32	60.4	7.57	Winchester.....	58	0	28.6	4.60
Monroe.....	79	28	55.4	8.29	Worcester (1).....	58	0	28.6	4.60
New Iberia.....	79	31	61.9	6.67	Worcester (2).....	56	2	31.5	4.36
Paincourtville.....	81	30	67.0	9.67	Michigan.				
Plaquemine.....	82	24	58.4	9.97	Adrian.....	57	0	30.5	6.51
Shell Beach.....	77	32	59.8	8.73	Albion (1).....	54	1	31.4	3.66
Sugar Ex. Station.....	78	32	61.2	11.25	Albion (2).....	58	3	30.8	3.69
Winniborough.....	84	50	67.9	4.73	Alma.....	54	3	27.3	2.42
Maine.					Ann Arbor.....	52	0	29.4	3.61
Bar Harbor.....	48	7	25.8	4.68	Atlantic.....	37	1	13.4	4.70
Belfast.....	45	8	21.7		Ball Mountain.....	52	0	27.7	2.77
Calais.....	49	8	20.7	3.91	Bangor.....	56	5	31.5	2.70
Cornish.....	48	10	23.0	3.78	Bear Lake.....	50	6	23.8	4.39
Fairfield.....	48	25	21.5	2.23	Bellsire.....	47	6	23.8	3.06
Farmington.....	51	20	18.5	2.13	Bell Branch.....	56	5	30.9	3.31
Farmington.....	51	20	18.5	2.13	Benton Harbor.....	59	5	33.6	2.80
Fort Preble.....	47	8	28.4	2.30					
Kent's Hill.....	48	11	21.8	3.41					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Michigan—Cont'd.</i>					<i>Minnesota—Cont'd.</i>				
Berlin.....	55	0	28.8	2.96	Pokegama Falls.....	39	39	5.5	1.63
Berrien Springs (1).....	57	8	31.3	4.15	Redwood Falls.....	39	39	5.5	1.41
Berrien Springs (2).....	57	8	31.3	3.85	Rolling Green.....	36	28	6.7	2.26
Birch Run.....	57	8	31.3	2.62	Saint Charles *.....	45	24	14.9	2.35
Birmingham.....	54	2	30.6	2.71	Sheldon *.....	44	29	12.2	0.80
Bronson.....	52	0	28.3	4.35	Tracy.....	44	29	12.2	2.10
Buchanan.....	55	0	30.8	4.97	<i>Mississippi.</i>				
Calumet.....	43	8	14.4	2.23	Agricultural College.....	78	23	53.1	8.50
Cassopolis.....	54	3	30.9	4.31	Batesville.....	77	23	49.6	5.60
Caldwell.....	49	4	23.6	2.86	Bay Saint Louis.....	80	35	62.6	3.05
Charlevoix.....	43	2	20.3	2.17	Booneville.....	75	21	50.4	11.58
Cheboygan.....	48	23	16.8	3.96	Brookhaven.....	84	30	58.8	7.88
Chelsea.....	54	0	29.0	3.09	Canton.....	78	26	56.4	5.87
Clinton.....	57	1	30.0	3.84	Edwards.....	79	26	57.0	4.46
Colon.....	52	2	27.3	4.59	Fayette.....	80	28	56.7	5.98
Concord.....	55	0	29.5	3.77	Greenville.....	75	28	53.4	5.38
Crystal Falls.....	48	21	14.9	1.65	Hattiesburg.....	85	30	63.2	6.79
Deerfield.....	54	2	30.7	.....	Holly Springs (1) *.....	74	22	49.1	5.66
Eden.....	53	4	29.4	2.84	Kosciusko.....	79	23	54.9	12.10
Evart.....	53	10	21.2	1.96	Logtown.....	78	31	63.0	10.95
Fairview.....	53	1	29.7	4.70	Louisville.....	84	20	56.6	8.10
Fitchburg.....	53	0	28.5	3.44	Moss Point.....	77	31	61.8	4.30
Flint.....	55	1	28.5	1.77	Palo Alto.....	78	23	51.9	9.59
Fort Brady.....	43	31	14.1	2.27	Pontotoc.....	77	22	50.4	10.99
Fort Mackinac.....	44	11	18.1	2.97	Ship Island.....	76	36	62.8	3.44
Fort Wayne.....	51	1	31.0	4.27	Summit.....	79	24	58.8	6.88
Freemont *.....	56	1	25.2	3.10	Vaiken.....	86	20	53.6	12.43
Gaylord.....	48	14	19.8	2.70	Washington.....	82	28	57.6	7.07
Gladin.....	52	5	23.1	1.80	Water Valley.....	79	24	51.9	8.15
Grand Rapids.....	57	1	28.1	1.49	Waynesboro (1).....	80	25	54.4	6.90
Grape.....	56	3	32.9	2.93	West Point.....	78	30	55.8	8.05
Grayling.....	45	10	21.4	3.50	Yazoo City.....	.....	.....	.....	6.60
Gulliver Lake.....	49	13	17.0	3.49	<i>Missouri.</i>				
Hanover.....	56	3	31.6	3.79	Adrian.....	70	10	28.4	2.05
Harbor Springs.....	48	12	20.7	2.74	Appleton City.....	72	2	34.5	2.74
Harrison.....	56	5	23.6	2.30	Austin *.....	62	3	32.8	1.20
Hart.....	50	2	30.1	2.50	Bethany.....	56	9	26.9	1.20
Hayes.....	.....	.....	.....	3.50	Brunswick.....	70	8	31.0	1.70
Highland Station *.....	52	1	28.3	2.94	California.....	78	0	35.0	1.23
Hillman.....	50	28	17.2	1.50	Cape Girardeau.....	.....	.....	.....	2.61
Hillsdale.....	54	1	28.6	2.57	Carrollton.....	70	3	30.9	1.48
Holt.....	.....	.....	.....	2.72	Carthage.....	72	5	35.5	2.27
Howell.....	55	0	28.3	3.23	Cassville.....	74	6	37.3	2.26
Ivan.....	49	1	22.4	2.88	Centerville.....	.....	.....	.....	4.40
Jackson.....	55	3	33.0	.....	Conception.....	56	13	26.0	3.60
Jeddo.....	52	2	26.5	1.85	Concordia.....	66	4	23.0	2.30
Kalamazoo.....	56	5	31.2	3.35	Dadeville.....	.....	.....	.....	2.33
Lansing.....	55	3	29.0	2.35	Darksville.....	74	2	38.3	1.82
Lathrop.....	47	17	15.7	2.12	Eldon.....	76	2	35.7	2.96
Madison.....	54	1	30.5	4.41	Excelsior Springs.....	59	7	27.5	2.25
Marshall.....	54	0	29.3	3.66	Fayette.....	74	4	31.6	2.41
May.....	56	0	26.9	2.12	Fox Creek.....	70	2	35.5	3.45
Montague.....	50	2	26.6	1.80	Glasgow.....	72	6	31.2	2.45
Mottville.....	56	4	30.6	4.30	Gordonville.....	68	18	41.5	2.52
Noble.....	52	0	29.6	4.44	Grand Pass.....	.....	.....	.....	1.85
North Marshall.....	48	7	25.5	2.93	Harrisonville.....	75	2	23.1	2.52
Northport.....	50	1	22.2	2.65	Hermann.....	73	8	35.3	3.37
Oliver.....	53	3	28.3	2.61	Jefferson Barracks.....	67	5	37.4	2.72
Otsego.....	55	5	29.1	4.33	Jerome.....	.....	.....	.....	2.25
Ovid.....	53	1	27.8	2.55	Kansas City.....	68	4	30.4	2.32
Parkville.....	.....	.....	.....	4.85	Lamonte (2) *.....	.....	11	.....	3.04
Paw Paw.....	55	4	30.6	3.53	Lebanon.....	72	6	40.4	2.50
Pontiac.....	54	4	30.4	3.57	Liberty.....	68	6	28.2	3.00
Pulaski.....	52	4	28.8	3.94	Louisiana Bridge.....	.....	.....	.....	2.28
Rawsonville.....	58	2	31.0	3.45	Marshall (2).....	73	5	31.0	0.42
Rochester.....	.....	.....	.....	7.75	Mine La Motte.....	64	12	38.0	4.26
Rockland.....	57	18	15.9	2.75	New Haven.....	74	6	34.8	2.80
Romeo.....	54	4	29.1	1.99	Oak Ridge.....	62	18	43.7	2.63
Roscommon.....	46	9	21.5	6.32	Oregon (1).....	58	8	26.4	1.52
Saint Ignace.....	45	18	16.4	2.73	Oregon (2) *.....	58	8	26.6	1.13
Saint John's.....	55	4	28.9	2.35	Pickering.....	.....	13	19.7	1.64
Sand Beach.....	54	1	26.5	1.80	Platte River.....	58	6	28.7	3.25
Standish.....	53	5	24.9	1.33	Princeton.....	58	8	27.7	1.84
Stanton.....	53	7	25.6	2.61	Saint Charles (1).....	.....	.....	.....	1.50
Stockbridge.....	.....	.....	.....	2.84	Saint Charles (2).....	69	1	34.4	2.74
Thornville.....	54	2	29.8	3.94	Saint Joseph.....	.....	.....	.....	1.99
Vandalia.....	54	2	31.1	4.13	Saint Louis.....	69	4	31.2	1.50
Vienna.....	.....	.....	.....	2.52	Sarcozie.....	74	0	37.0	2.11
Washington.....	56	3	29.8	2.39	Sedalia.....	73	5	32.7	2.42
Weldon Creek.....	52	6	24.5	3.21	Shelbina.....	.....	.....	.....	1.60
West Branch.....	49	3	23.4	3.19	Stellville.....	73	9	36.0	3.16
White Pigeon.....	52	6	27.6	3.75	Stella.....	75	2	34.8	2.84
Williamston.....	56	4	32.0	3.10	Warrensburg.....	72	2	32.2	2.55
Ypsilanti.....	48	0	27.4	4.30	Warrenton.....	.....	3	30.8	3.14
<i>Minnesota.</i>					Wither's Mills.....	72	1	33.4	2.00
Alexandria.....	.....	.....	.....	1.10	<i>Montana.</i>				
Alma City.....	40	30	9.7	1.08	Blackfeet Agency.....	37	30	5.0	1.50
Crookston.....	36	31	3.2	1.63	Camp Poplar River.....	39	34	2.8	0.45
Fairbault.....	45	29	12.1	1.25	Choteau.....	41	25	6.2	2.05
Farmington.....	38	25	10.6	1.75	Custer.....	.....	.....	.....	1.70
Fergus Falls.....	.....	.....	.....	0.43	Fort Assiniboine.....	40	33	8.5	1.72
Fort Ripley.....	.....	.....	.....	1.20	Fort Custer.....	40	36	7.5	0.35
Fort Snelling.....	43	25	8.7	1.12	Fort Keogh.....	45	32	5.0	1.03
Grand Meadow.....	51	27	14.8	1.91	Fort Missoula.....	46	22	15.9	3.09
Kimbree.....	42	28	8.5	.....	Fort Shaw.....	42	34	7.8	1.83
L. Winnibogishish.....	36	35	5.6	1.15	Glendive.....	43	30	9.0	0.50
Leech Lake.....	42	35	5.9	1.35	Martindale.....	45	31	11.0	2.55
Le Sueur.....	41	20	9.6	2.10	Powder River.....	41	35	6.6	0.60
Mankato.....	43	22	13.4	1.52	Virginia City.....	51	23	16.1	0.78
Minneapolis.....	44	21	10.8	2.11	<i>Nebraska.</i>				
Montevideo.....	43	27	8.0	1.96	Alliance.....	47	25	12.4	1.10
Morris.....	42	28	6.4	1.30	Anselmy.....	59	23	20.9	.....
Northfield.....	49	27	11.6	1.98	Ashland.....	52	21	.....	0.69
Ortonville.....	.....	.....	.....	2.20	Auburn.....	52	13	26.4	1.46
Pine River.....	37	44	3.0	1.26	Bassett.....	62	20	14.5	1.40

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Nebraska—Cont'd.</i>	0	0	0	<i>Ins.</i>	<i>N. Hampshire—Con.</i>	0	0	0	<i>Ins.</i>
Beaver City	64	-8	25.2	0.75	Walpole	47	-11	23.6	2.95
Burwell	48	-13	13.2	0.75	West Milan	52	-28	19.6	3.64
Creighton	39	-20	11.2	1.95	Wier's Bridge	52	.....	.....	3.94
Crete	56	-12	19.9	0.89	Wolfborough	.....	.....	.....	4.22
Culbertson	.....	.....	.....	0.21	<i>New Jersey.</i>	.....	.....	.....	.....
David City	52	-17	12.8	1.15	Allaire	65	8	37.0	.....
De Soto	48	-11	17.3	0.97	Asbury Park	61	13	37.9	4.73
Dunning	48	-16	17.8	1.30	Belleville	.....	.....	.....	4.62
Ericson	48	-12	14.0	2.00	Beverly	70	10	37.4	5.10
Fairbury	60	4	.....	0.51	Billingsport L. H.	64	12	38.5	.....
Fort Niobrara	48	-30	17.9	1.24	Bridgeton	69	18	42.5	6.70
Fort Omaha	53	.....	.....	0.91	Camden	69	18	40.6	5.60
Fort Robinson	46	-15	15.9	0.80	Cape May C. H. f.	70	11	40.7	6.34
Fort Sidney	45	-10	19.0	1.30	Dover	59	3	33.6	4.04
Franklin	56	8	23.4	0.31	Egg Harbor City	68	11	39.4	7.20
Freemont	47	-14	16.7	0.75	Franklinville	68	10	39.2	6.57
Genoa	40	-16	13.3	2.35	Freehold	66	10	37.4	6.03
Gering	54	-16	19.7	0.74	Gillette	62	8	34.0	4.39
Grand Island	42	-18	11.7	0.34	Highland Park	65	9	36.9	4.67
Grant	.....	.....	.....	0.60	Imlaytown	64	13	36.6	5.35
Harvard	47	-13	16.7	0.99	Junction City	.....	.....	.....	3.70
Hastings	50	-10	.....	3.00	Lambertville	62	14	37.8	3.74
Hay Springs	49	-20	11.4	1.38	Locktown	60	8	35.6	4.08
Hebron	58	-10	23.5	0.90	Madison	62	5	34.4	4.93
Holdrege	44	-11	17.8	.....	Moorestown	68	13	38.0	5.28
Imperial	58	-10	21.1	.....	Mount Holly	67	17	40.6	.....
Kimball	55	-14	22.3	0.65	Newark (1)	60	12	35.9	4.67
Lexington	60	-16	21.8	0.65	Newark (2)	66	9	45.3	4.86
Lincoln	54	-12	22.3	1.90	New Brunswick (1)	67	10	36.8	4.68
Long Pine	70	-17	14.0	1.90	New Brunswick (2)	69	10	40.3	5.30
Marquette	45	-22	.....	1.90	Ocean City	59	17	40.3	5.30
Minden	30	-10	15.7	0.93	Oceanic	64	17	39.4	5.36
Nebraska City	55	-13	20.4	0.81	Paterson	65	11	40.3	4.21
North Loup	45	-22	13.9	0.67	Princeton	63	12	36.9	4.14
Oakdale	41	-26	10.5	2.13	Rancocas	63	13	37.7	5.00
O'Neill	45	-20	14.4	0.75	Readington	68	10	37.7	.....
Palmer	44	-22	10.1	0.90	Salem	68	13	38.9	6.59
Plattsmouth	.....	.....	.....	2.70	South Orange f.	64	10	35.1	4.58
Ravenna	46	-16	16.2	1.21	Tenafly	66	1	34.6	4.54
Sargent	.....	.....	.....	1.18	Trenton	64	10	41.0	4.41
Seward	50	-10	18.0	0.81	Vineland	71	15	40.5	5.85
Syracuse	50	-10	22.9	0.84	Woodbury	68	16	40.8	5.97
Tecumseh	52	-14	23.9	0.80	<i>New Mexico.</i>	.....	.....	.....	.....
Tekamah	51	-18	18.4	1.25	Albert	69	5	40.7	0.17
Wallace	52	-8	20.7	.....	Antelope Spring	57	-9	29.4	0.81
Weeping Water	54	-12	21.3	0.99	Cuba	.....	.....	.....	2.60
West Hill	41	-15	12.3	2.85	Deming	74	30	47.0	0.33
West Point	41	-22	.....	1.00	Embudo	.....	.....	.....	1.92
Whitman	42	-18	13.9	0.40	Estalina Springs	61	-13	32.6	1.04
Wilcox	60	-10	.....	0.31	Fort Bayard	63	9	38.3	1.93
<i>Neveda.</i>	.....	.....	.....	.....	Fort Marcy	49	-12	26.1	1.99
Austin	43	0	26.6	1.77	Fort Stanton	66	5	37.0	0.12
Battle Mountain	56	2	32.9	0.75	Fort Union	65	-16	29.9	0.33
Belmont	40	-2	26.1	2.06	Fort Wingate	60	-5	31.6	0.27
Beowawe	56	-13	28.2	1.65	Gallinas Spring	62	6	41.0	0.54
Brown	62	11	38.8	0.40	Hillsborough f.	70	10	42.7	1.53
Candelaria	50	7	31.6	0.80	La Luz	72	12	43.8	1.12
Carlin	45	-18	22.7	2.02	Lordsburg	70	20	43.9	1.52
Carson City	55	4	33.7	4.18	Los Lunas	64	-3	36.5	0.85
Crane's Ranch	.....	.....	.....	1.47	Monero	50	-22	22.2	0.68
Downeyville	60	5	36.2	0.83	Red Cañon f.	68	0	39.2	0.52
Elko (1)	50	-14	27.9	0.20	Springer	.....	.....	.....	0.00
Ely	43	-19	19.5	1.34	Taos	.....	.....	.....	1.34
Fenelon	56	-2	29.3	2.48	<i>New York.</i>	.....	.....	.....	.....
Genoa	53	3	32.4	4.64	Adams Centre	.....	.....	.....	1.28
Gileconda	50	-3	31.6	1.75	Adelphi Academy	65	15	36.0	.....
Halleck	48	-23	23.5	1.00	Addison	57	4	30.9	2.89
Hawthorne (1)	58	20	37.4	1.09	Afton	.....	.....	.....	3.93
Hawthorne (2)	60	7	37.4	1.02	Akron	.....	.....	.....	3.79
Hot Springs	60	0	37.0	0.65	Alabama	55	3	27.3	4.63
Humboldt	41	5	30.4	1.40	Apulia	.....	.....	.....	3.25
Lewer's Ranch	51	8	34.9	0.30	Arcade (1)	52	0	26.2	4.04
Mill City	52	4	33.2	0.99	Au Sable Forks	.....	.....	.....	2.00
Palisade	50	-10	28.8	1.90	Avon	.....	.....	.....	2.88
Palmetto	55	0	29.3	3.66	Baldwinsville	57	4	29.9	3.95
Pioche	53	6	25.6	3.83	Bethlehem Centre	.....	.....	.....	3.15
Reno	50	9	34.9	2.20	Blood's Depot	.....	.....	.....	2.72
Reno State Univ'ty	54	8	33.3	2.69	Boyd's Corners	54	8	33.2	6.00
Tecoma	40	-2	22.2	0.30	Brookfield	47	-8	25.6	5.06
Toano	48	-10	24.6	3.00	Canton f.	52	-15	22.2	1.86
Wadsworth	56	8	35.7	1.32	Carmel	54	7	31.5	5.13
Wells	50	-22	23.3	0.80	Central Park, N. Y.	50	14	36.5	4.91
Winnemucca	62	3	35.3	0.89	Chenango Forks	.....	.....	.....	1.68
Younts Ranch	66	16	44.3	2.31	Cherry Creek	.....	.....	.....	6.90
<i>New Hampshire.</i>	.....	.....	.....	.....	Cooperstown	52	-6	25.9	4.76
Antrim	.....	.....	.....	2.35	David's Island	57	10	33.0	4.15
Belmont	.....	.....	.....	4.13	De Kalb Junction	.....	.....	.....	3.30
Berlin Falls	48	-27	17.2	.....	Demeter	.....	.....	.....	3.79
Berlin Mills	49	-23	18.8	1.94	Deposit	.....	.....	.....	2.63
Concord	52	-9	26.0	3.54	Dunkirk (2)	.....	.....	.....	3.10
East Canterbury	49	5	22.6	3.30	Easton	.....	.....	.....	4.18
Grafton	51	-17	23.0	.....	Fleming	55	3	27.3	.....
Groveton	48	-22	19.7	2.20	Fort Columbus	58	12	35.1	3.86
Hanover (1)	47	-16	23.7	2.40	Fort Hamilton	58	18	36.4	4.80
Hanover (2)	50	-18	23.7	2.56	Fort Niagara	53	9	31.8	4.42
Lake Village	.....	.....	.....	3.98	Fort Porter	50	7	30.0	4.20
Littleton	50	-17	31.3	2.15	Fort Schuyler	58	11	33.4	4.12
Manchester (1)	54	-10	27.8	3.19	Fort Wadsworth	62	12	37.2	5.71
Mine Falls	.....	.....	.....	4.23	Galway	.....	.....	.....	5.61
Nashua	58	-5	28.2	4.25	Geneva	60	3	30.2	3.04
Newton	55	-7	27.7	.....	Hammondsport	59	5	31.0	3.78
North Conway	54	-16	21.4	4.02	Honeybrook Brook	56	3	29.3	3.90
Pennichuck Station	.....	.....	.....	4.11	Ithaca	62	5	32.0	3.17
Plymouth	48	-12	30.4	3.35	Keene Valley	54	-12	30.7	2.71
Stratford	50	-22	23.8	2.18	Le Roy	59	1	28.6	7.10

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>New York—Cont'd.</i>	°	°	°	<i>Ins.</i>	<i>Ohio—Cont'd.</i>	°	°	°	<i>Ins.</i>
Liberty				2.95	Gratiot	66	6	37.4	6.03
Lowville	45	-3	22.3	4.12	Greenville	57	1	34.0	4.20
Lyndonville				2.83	Hanging Rock	76	12	41.0	5.20
Lyons	59	8	30.0	1.52	Hassan	76	3	35.0	5.58
Lyon Mountain (2)				3.11	Hiram	61	2	32.0	5.26
Madison Barracks	52	-5	26.9	2.05	Hudson				5.85
Malone	52	-11	21.1	4.38	Jacksonborough	68	2	35.2	4.15
Middletown	56	6	30.3	4.79	Kenton	60	2	36.0	4.07
Minnewaska	55	2	25.9	4.40	Logan	75	5	38.0	6.59
Mount Morris	62	9	31.5		Lordstown	62	4	33.2	4.03
Newark Valley				2.75	Mansfield				6.44
New Lisbon	52	-10	25.4	3.56	Marietta (1)				5.43
Ogdensburg	46	-13	19.0	1.85	Marietta (2)	72	11	41.0	4.97
Oxford	50	-4	26.3	4.15	Marion				3.90
Palermo	60	-1	27.4	3.45	McConnellsville	72	6	39.0	6.32
Palmyra	61	6	29.3	3.14	Napoleon	57	2	34.8	3.95
Pawling				5.20	New Alexandria	63	4	38.0	7.04
Peekskill	58	8	30.4	4.60	New Comerstown	66	6	37.0	5.79
Pendleton Centre	53	2	27.9	3.44	North Lewisburgh	68	1	35.3	5.25
Perry City	54	-3	27.2	4.23	Oberlin	57	5	33.0	4.35
Plattsburgh	51	-7	23.2		O. S. University	59	6	36.0	4.80
Plattsburgh B'ks	45	-10	22.5	1.60	Orangeville	50	3	33.8	5.15
Port Jervis	55	5	28.8	4.93	Pomeroy	73	9	41.0	4.22
Potsdam	52	-15	21.3	3.62	Portsmouth (2)	80	10	42.1	5.00
Poughkeepsie	55	-1	29.5	4.45	Quaker City				4.67
Quaker Street	50	-6	23.2	5.00	Salineville	55	13	34.6	4.94
Rome	50	-5	25.8	5.99	Shiloh	56	4	34.7	4.21
Romulus	56	4	27.1	2.12	Sidney				4.72
Sand Bank				2.76	Springborough				6.58
Setauket	61	14	35.1	6.26	Tiffin	58	6	34.2	4.19
Sherman	52	0	29.2	6.04	Upper Sandusky	58	2	35.0	4.13
Schodack Depot				3.83	Wauseon	56	0	31.0	4.58
South Canisteo	55	0	28.0	4.72	Waverly	76	7	39.0	3.59
S. E. Reservoir				6.00	Waynesville				5.87
Syracuse	56	0	30.1	3.97	Westerville	64	5	36.1	5.05
Turin	45	-16	19.5	7.60	West Milton	62	1	38.5	4.95
Utica	52	3	28.8	5.35	Weymouth	59	3	33.0	5.04
Wappinger's Falls				4.69	Wheeler				3.52
Watertown	52	-5	25.4	3.75	Wooster	60	3	34.0	4.83
Waterleit Arsenal		2		3.00	Youngstown	66	6	36.0	4.00
Wedgwood	54	-2	26.6	3.88	Zanesville				5.99
West Point	45	5	25.6	4.68					
White Plains	55	12	35.0	3.71	<i>Oklahoma Ter.</i>				
Willets Point	61	10	36.0	4.25	Fort Reno	83	10	41.2	0.13
Watkins	64	8	32.0		Fort Sill	85	12	42.6	0.14
					Guthrie	84	11	42.4	0.22
<i>North Carolina.</i>					<i>Oregon.</i>				
Asheville	75	14	45.2	8.13	Albany	50	27	37.2	7.73
Bryson City				9.42	Ashland (1)	52	17	36.3	
Chapel Hill	76	22	49.0	5.70	Ashland (2)	57	18	37.4	4.43
Currituck Inlet				3.94	Bandon	53	32	45.0	14.08
Douglas	75	15	45.0	4.80	Beulah	51	9	23.8	3.09
Franklin	75	13	40.3	9.10	Cascade Locks				9.69
Hendersonville	70	17	45.2	10.73	Corvallis	48	22	36.2	7.83
Highlands	66	4	40.7	20.20	Deer Island				5.21
Lenoir	73	19	45.2	6.60	East Portland	51	20		3.56
Marion	77	16	44.5	6.43	Eola	48	19	35.7	7.09
Marshallberg	81	24	55.6	2.35	Eugene	50	27	38.4	9.97
Morganton	75	17	45.4	6.63	Forest Grove	48	20	38.4	5.04
Mount Airy	74	13	43.4	5.31	Gardiner	59	30	42.0	12.88
Mount Holly				7.02	Gold Beach	62	33	47.6	8.64
Mount Pleasant	78	21	48.5	6.65	Grant's Pass	48	24	38.4	7.55
Murphy				12.87	Happy Valley	56	-6	26.7	2.70
Oak Ridge	76	17	45.8	5.92	Hardman	46	7	25.4	3.38
Pittsborough	74	20	47.2	3.80	Heppner	46	6	29.4	2.90
Raleigh	77	24	51.0	4.40	Hood River	43	12	30.8	6.70
Smithfield	79	22	50.8	3.50	Hubbard	50	30	37.0	6.18
Soapstone Mount		18		37.0	Jacksonville	54	19	37.8	6.11
Washington	80	21	52.7	2.44	Joseph	44	-10	19.6	3.12
Weldon	76	31	49.2	4.86	La Grande		21	27.4	3.34
Wilkeyton	76	20	49.6	4.95	Lakeview	46	-4	28.1	4.95
					Lone Rock	43	2	25.5	3.01
<i>North Dakota.</i>					McMinville	50	22	35.5	6.58
Fort A. Lincoln	48	-27	7.9	0.43	Mount Angel	49	22	36.6	5.76
Fort Buford	37	-37	10.4	0.14	Pendleton	52	2	29.8	2.16
Fort Pembina	28	-29	-3.0	1.06	Silver Lake	49	-3	27.0	3.08
Fort Yates	46	-20	9.4	0.37	Siskiyou	50	30	34.5	0.70
Gallatin	40	-32		0.42	Telocast				2.81
Grafton	30	-30	-2.2	1.58	The Dalles	47	10	32.6	2.47
Kelso	35	-37	3.2	0.95	Toledo	54	28	39.7	11.06
Napoleon	42	-26	4.3	0.98	Vernonia	45	22	34.7	7.29
New England City	44	-32	6.0	0.40	West Fork	48	29	37.2	13.78
Steele	45	-28	5.0						
Wahpeton	54	-39	7.6	1.54	<i>Pennsylvania.</i>				
Wild Rice		-26	0.6	1.65	Allegheny Arsenal	67	9	38.9	5.60
					Altoona	64	13	40.2	4.59
<i>Ohio.</i>					Aqueduct	63	8	37.2	2.66
Akron	60	5	34.0	3.26	Blooming Grove	53	2	30.8	6.20
Ashland	59	4	35.0	3.91	Blue Knob	56	-3	29.7	3.36
Athens	74	7	39.0	4.09	Brookville				4.94
Bangorville	66	1	33.0	6.14	Browsers Look				4.50
Bellevue	55	4	32.0	3.85	Carlisle	67	9	35.6	4.22
Bement	57	6	32.9	5.44	Chambersburgh	68	7	33.0	2.54
Caledonia				5.56	Charlesville	65	9	34.7	7.10
Canton				4.26	Clarion (1)				4.02
Celina	61	1	37.0	4.13	Coatesville	67	6	35.9	5.31
Circleville (1)				5.36	Confluence				8.00
Clarksville	71	4	37.0	5.81	Coopersburgh	60	8	35.5	4.57
Cleveland	57	7	34.3	4.95	Corry	56	2	30.4	6.67
Columbus Barracks	68	5	38.7	5.45	Davis Island Dam				6.59
Dayton	69	1	38.0	4.41	Drifton	56	5	31.6	2.90
Demos	68	5	36.4	7.61	Duylstown				4.89
Ellsworth				5.46	Do Bois				5.98
Elyria	53	6	34.0	5.43	Dyberry	50	-7	27.1	4.97
Findlay	58	2	33.0	4.19	Eagle's Mere	47	0	26.8	5.46
Garrettsville	60	-2	31.7	5.65	Easton	59	11	34.2	3.74
Georgetown	70	5	39.0	3.67	Edinborough	48	4	29.5	
Granville	61	-2	35.0	6.16					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Pennsylvania—Con.</i>	°	°	°	<i>Ins.</i>					
Emporium.....	61	4	33.8	4.56	Fort Sully.....	42	-19	7.9	0.72
Forks of Neshaminy.....	61	4	33.8	4.50	Highmore.....	41	-20	9.9	T.
Frankford Arsenal.....	70	10	39.4	4.59	Howard.....	44	-24	8.6	1.12
Frederick.....	61	4	33.8	4.50	Kimball*.....	44	-18	5.6	1.70
Freeport.....	70	10	39.4	4.50	Millbank*.....	48	-19	13.6	0.25
Girardville.....	57	10	33.9	4.36	Onida*.....	40	-20	5.7	.....
Grampian Hills.....	58	-2	30.5	7.01	Del Rio.....	49	-23	10.2	2.80
Greensborough.....	61	5	34.6	6.18	Parkston*.....	46	-16	13.2	2.50
Greenville.....	61	5	34.6	2.50	Saint Lawrence*.....	47	-20	8.6	1.45
Hamburgh.....	62	6	35.5	3.94	Sioux Falls*.....	43	-26	9.4	1.01
Holidaysburg.....	62	6	35.5	5.92	Spearfish*.....	49	-28	13.3	2.04
Honesdale.....	56	-3	29.4	3.45	Vermillion.....	43	-20	11.6	1.30
Huntingdon.....	64	5	33.5	3.84	Webster.....	45	-30	13.2	2.55
Indiana.....	60	4	34.5	5.99	Wolsey*.....	44	-25	6.3	1.60
Johnstown.....	62	11	37.4	7.83	<i>Tennessee.</i>				
Kennett Square*.....	60	5	35.6	5.84	Andersonville.....	70	18	44.5	8.20
Kilmer.....	64	12	38.6	4.31	Ashwood*.....	72	21	47.5	7.45
Lancaster.....	66	14	37.2	3.01	Austin.....	73	18	46.5	7.18
Lansdale.....	64	16	37.7	4.43	Carthage.....	70	18	44.5	8.20
Lebanon.....	64	16	37.7	4.43	Charleston.....	73	19	44.1	6.41
Le Roy*.....	51	5	29.2	3.13	Clarksville.....	73	19	44.1	6.41
Lewisburg.....	58	8	34.9	3.75	Clinton.....	73	19	44.1	6.41
Ligonier.....	61	7	38.2	8.29	Columbia.....	74	22	46.5	8.63
Lock Haven.....	65	5	34.2	4.21	Covington (1).....	74	22	46.5	8.63
Lock No. 4.....	70	10	39.4	4.50	Dare.....	76	19	50.5	8.90
Mahoning.....	56	13	35.3	3.92	Fayetteville.....	73	20	48.7	7.71
Mauch Chunk.....	67	10	38.2	4.60	Florence Station.....	72	23	47.2	7.36
McConnellsburgh.....	55	3	32.9	6.65	Franklin.....	73	18	45.6	6.78
Meadville.....	64	5	35.3	4.54	Greenville.....	72	19	45.9	7.44
Messopon.....	64	5	35.3	4.54	Hohenwald.....	77	13	46.4	6.92
New Castle.....	64	5	35.3	4.54	Jacksborough.....	71	17	46.0	6.53
Nisbet*.....	64	13	34.2	5.20	Johnson City.....	73	18	46.0	6.53
Oil City.....	64	5	35.3	4.54	Johnstown.....	73	18	46.0	6.53
Ottaville.....	64	5	35.3	4.54	Kingston (1).....	73	18	46.0	6.53
Parker's Landing.....	64	5	35.3	4.54	Lewisburg.....	68	20	47.2	7.69
Philadelphia (1).....	70	17	40.5	5.32	Loudon.....	72	18	46.1	7.98
Philadelphia (2).....	63	10	37.8	4.60	Lynnville.....	72	18	46.1	7.98
Phoenixville.....	63	10	37.8	4.60	McKenzie.....	70	24	44.0	3.33
Pleasant Mount.....	62	13	37.7	4.05	Missionary Ridge*.....	73	22	47.2	.....
Point Pleasant.....	62	13	37.7	4.05	Nunnally.....	73	16	46.5	5.59
Pottstown.....	62	13	37.7	4.05	Parksville.....	73	21	49.8	9.25
Quakertown.....	62	13	37.7	4.05	Riddleton.....	72	17	47.0	7.75
Reading.....	62	13	37.7	4.05	Rockwood.....	72	17	47.0	7.75
Ridgway.....	58	2	33.1	5.17	Rogersville.....	71	20	44.6	9.61
Rimersburg.....	58	2	33.1	5.17	Rugby.....	72	12	43.6	7.05
Salem Corners.....	51	10	32.1	7.20	Sharps.....	76	14	48.6	9.25
Saltsburgh.....	51	10	32.1	7.20	Springdale.....	70	18	47.9	8.95
Seisholtzville.....	55	5	34.1	3.09	Strawberry Plains.....	71	20	44.6	5.40
Selin's Grove.....	55	5	34.1	3.09	Trenton.....	71	20	44.6	5.40
Smethport.....	56	2	34.3	4.51	Waynesborough.....	69	17	45.1	7.09
Smith's Corners.....	63	0	33.5	5.50	<i>Texas.</i>				
Somerset.....	57	7	32.6	3.48	Austin (2).....	85	29	57.4	.....
South Easton.....	57	7	32.6	3.48	Brady.....	87	18	49.9	0.19
State College.....	58	4	33.1	4.46	Berlin.....	84	18	51.0	0.50
Swarthmore.....	68	12	38.3	1.80	Brazoria.....	79	31	50.0	3.75
Stoytown.....	58	8	32.1	5.97	Brenham.....	81	26	49.0	2.96
Troy*.....	68	10	39.9	5.88	Brownwood.....	87	16	49.3	0.70
Uniontown.....	58	10	39.9	5.88	Burnet.....	76	25	52.0	1.17
Warren.....	54	5	29.8	3.46	Camp del Rio.....	97	22	57.8	0.00
Wellsborough*.....	64	11	37.7	6.45	Camp Eagle Pass.....	91	24	59.6	0.10
West Chester.....	64	11	37.7	6.45	C'p Peña Colorado.....	85	11	48.1	0.00
West Newton.....	68	11	38.4	4.14	Childress.....	86	11	41.7	T.
Westtown.....	58	11	38.4	4.14	Coldwater.....	61	4	30.8	0.00
Wilkes Barre.....	58	10	37.4	6.00	College Station.....	90	25	58.4	2.05
Wysox.....	59	3	31.6	2.71	Colorado.....	88	15	51.4	0.05
York.....	65	5	37.0	3.37	Columbia.....	78	30	60.4	2.75
<i>Rhode Island.</i>					Corsicana (1).....	81	26	48.0	0.31
Bristol.....	52	8	32.2	6.29	Corsicana (2).....	78	19	50.4	0.29
Fort Adams.....	54	6	32.0	5.18	Duval.....	81	26	56.9	0.30
Kingston (1).....	57	6	32.1	7.20	Edinburgh.....	74	20	45.2	0.26
Kingston (2).....	58	5	32.6	7.26	Epworth.....	80	15	48.3	0.41
Lonsdale.....	60	10	35.6	6.08	Forestburg*.....	79	14	46.3	0.21
Newport.....	61	10	35.2	5.40	Fort Bliss.....	80	34	64.3	0.78
Olneyville.....	61	10	35.2	5.40	Fort Brown.....	87	26	57.2	1.05
Pawtucket.....	60	9	33.6	6.00	Fort Clark.....	89	34	64.3	0.78
Providence (1).....	56	9	32.0	5.38	Fort Davis.....	78	13	50.8	0.00
Providence (2).....	56	9	32.0	5.38	Fort Hancock.....	83	3	45.4	0.00
Providence (3).....	58	6	32.3	6.07	Fort McIntosh.....	91	29	63.1	0.00
<i>South Carolina.</i>					Fort Ringgold.....	99	30	65.2	0.05
Aiken.....	79	24	55.7	3.83	Fort Worth.....	87	24	52.6	4.85
Belmont.....	76	24	52.2	7.30	Fredericksburg.....	87	23	53.7	0.81
Cheraw.....	82	25	54.9	3.15	Gainesville.....	84	11	47.8	0.99
Evergreen*.....	76	18	48.1	9.53	Gallinas.....	90	24	56.3	0.41
Greenville.....	76	18	48.1	9.53	Graham.....	84	15	45.5	0.19
Jacksonborough.....	83	27	59.7	1.69	Grapevine*.....	86	18	46.7	1.14
Kirkwood.....	70	28	51.6	3.89	Hansford.....	72	8	35.6	0.13
Port Royal*.....	80	30	58.8	1.92	Haskell.....	80	20	45.8	0.00
Simpsonville.....	77	20	48.0	6.22	Houston.....	82	26	58.6	3.44
Spartanburgh (1).....	77	20	48.0	6.22	Huntsville.....	80	25	55.4	3.56
Statesburg.....	80	28	54.4	3.07	La Grange*.....	83	20	57.2	3.50
Walhalla.....	76	30	48.8	5.74	Longview.....	83	21	55.1	3.52
Winnabourgh.....	82	28	53.6	3.85	Menardville.....	87	17	50.7	0.46
Yorkville.....	80	23	52.0	7.49	Merkel.....	19	39.2	0.00	
<i>South Dakota.</i>					Mesaquite.....	87	19	51.2	0.96
Aberdeen.....	39	-25	3.8	0.55	Mountain Springs.....	85	18	48.3	1.20
Alexandria.....	46	-21	8.4	1.60	New Braunfels.....	85	29	56.8	0.49
Canton.....	40	-20	10.2	1.20	New Elm.....	83	27	57.5	3.10
Clark.....	46	-21	5.8	1.27	Panhandle.....	75	28	37.6	0.00
Cross.....	54	-32	17.9	1.27	Panther.....	88	20	51.1	1.06
De Smet*.....	41	-19	6.2	1.10	Round Rock.....	76	26	54.8	0.47
Elkton.....	41	-22	7.9	1.35	San Antonio.....	86	27	57.4	1.38
Flandreau.....	44	-27	8.8	0.97	Silver Falls.....	80	12	47.3	T.
Fort Bennett.....	43	-25	13.0	0.40	Temple.....	84	31	51.9	0.30
Fort Meade.....	58	-33	12.7	0.83	Venus.....	89	18	51.0	0.90
Fort Randall.....	47	-13	13.4	1.34	Waco (2).....	89	24	54.6	0.40

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.			Max.	Min.	Mean.	
<i>Texas—Cont'd.</i>					<i>W. Virginia—Cont'd.</i>				
Weatherford †	86	15	52.8	0.60	Kingwood.....	60	9	33.2	Ins.
Wichita Falls *	88	9	43.9	0.03	Mont Alto.....	54	4	32.4	.....
<i>Utah.</i>					<i>Morgantown †</i>				
Alta.....	38	-15	19.0	10.40	Pleasant Hill *.....	66	8	36.9	6.31
Beaver †.....	56	-11	31.9	1.17	Point Pleasant †.....	66	8	36.9	5.72
Blue Creek *.....	49	-6	26.6	0.70	Rowlesburgh † (1).....	72	10	39.3	5.62
Corinne.....	49	-12	26.9	1.90	Tannery *.....	72	10	39.3	.....
Fort Douglas.....	55	3	30.6	0.76	Tyler's Creek.....	68	18	47.6	3.52
Fort DuChesne.....	47	-19	19.1	0.28	Weston.....	68	18	47.6	5.90
Grouse Creek.....	49	-15	27.9	1.00	Wheeling.....	68	18	47.6	6.58
Kelton*.....	49	-15	27.9	1.00	White Sulph' Sp'gs.....	68	18	47.6	4.97
Lake Park.....	52	0	28.6	1.48	<i>Wisconsin.</i>				
Levan.....	46	-12	19.8	2.88	Amherst.....	46	-21	17.0	2.48
Logan.....	54	-10	24.8	1.30	Appleton (1).....	45	-16	19.0	1.88
Loosef.....	54	-6	24.9	1.30	Appleton (2).....	45	-13	.....	2.74
Moab.....	54	-6	24.9	1.30	Bayfield.....	45	-13	.....	2.33
Mount Carmel*†.....	51	-5	24.4	4.66	Beaver Dam.....	51	-14	.....	1.01
Mount Pleasant.....	39	-19	16.3	2.81	Beloit.....	58	-11	24.0	1.20
Nephi †.....	47	-19	23.9	2.06	Berlin.....	58	-11	24.0	1.20
Ogden (1).....	46	0	27.7	2.33	Butternut*.....	58	-11	24.0	1.20
Ogden (2)*.....	46	0	27.7	2.33	Cadiz.....	44	-4	24.7	1.68
Park City.....	52	-10	21.4	7.25	Centralia.....	46	-29	.....	1.77
Parowan *.....	52	-10	21.4	7.25	Chippewa Falls.....	55	-14	22.6	2.03
Price †.....	50	-5	26.9	0.75	Columbus.....	55	-14	22.6	1.45
Promontory.....	50	-5	26.9	0.75	Delevan.....	58	-12	23.6	0.09
Provo City.....	56	-4	26.6	1.65	De Pere.....	59	-26	21.0	3.09
Richfield.....	56	-14	29.8	1.60	Eau Claire.....	46	-28	16.5	2.95
Saint George.....	68	10	38.8	2.15	Elroy.....	51	-30	16.5	1.80
Snowville.....	51	16	34.9	0.98	Embarras*.....	47	-26	16.7	4.05
Stockton.....	43	-10	34.2	.....	Fond du Lac.....	54	-23	21.3	1.17
Terrace*.....	52	2	37.7	0.40	Glasgow.....	45	-12	18.7	2.23
Uintah.....	52	5	25.2	.....	Greenwood.....	47	-35	12.8	2.84
<i>Vermont.</i>					Hammond.....	47	-34	.....	1.80
Brattleborough (1).....	50	-8	26.5	4.17	Hayward.....	45	-37	11.6	2.28
Brattleborough (2).....	50	-4	27.1	.....	Hillsborough.....	50	-22	17.0	2.25
Burlington.....	51	3	25.6	1.01	Hyden Creek*.....	54	-12	24.6	1.13
Chelsea*.....	43	-17	19.0	2.86	Ithaca.....	51	-13	19.3	1.24
Cornwall.....	52	-16	19.5	3.14	Janeville.....	37	-9	28.4	1.14
East Berkshire †.....	50	-13	24.5	4.18	Kenosha.....	60	-6	.....	1.60
Hartland.....	50	-16	22.7	5.25	Koepnick.....	56	-20	18.8	1.67
Jacksonville.....	47	-15	23.1	1.95	Lancaster.....	51	-19	21.4	1.60
Lunenburg *.....	51	-17	24.0	3.13	Lincoln *.....	54	-14	21.9	2.01
Saxton's River.....	46	-14	22.4	3.30	Madison.....	48	-20	24.4	2.01
Stratford*.....	48	-10	26.2	2.76	Manitowoc.....	46	-32	13.8	2.33
Vernon.....	45	-12	22.2	.....	Medford (1) †.....	47	-25	13.2	2.63
Weatherfield C'tre.....	45	-12	22.2	.....	Medford (2).....	46	-33	15.8	2.63
<i>Virginia.</i>					Memomone.....	49	-17	19.6	2.66
Abingdon.....	77	21	47.1	5.10	Nevilleville*.....	47	-18	20.7	1.09
Birdsneat *.....	62	8	33.4	3.18	Oconto.....	44	-28	17.0	2.65
Bolar *.....	75	18	42.9	3.76	Oshkosh †.....	44	-34	17.2	1.37
Casanova.....	67	15	42.6	4.14	Peshigo.....	44	-34	17.2	1.37
Christiansburg †.....	73	11	42.3	3.45	Phillips †.....	44	-34	17.2	1.37
Dale Enterprise †.....	74	12	41.5	4.74	Plover.....	44	-34	17.2	1.37
Fort Monroe.....	76	13	41.4	4.62	Portage (1) †.....	50	-19	20.5	1.55
Fort Myer.....	67	15	42.2	4.39	Portage (2).....	57	-15	23.0	1.05
Lexington †.....	74	18	44.7	5.40	Prairie du Chien.....	46	-40	8.8	2.31
Marion.....	78	13	44.4	5.78	Rhinelanders.....	47	-26	16.7	4.05
Mossing Ford *.....	77	18	45.3	5.60	Wauzeka*.....	47	-26	16.7	4.05
Nottaway C. H.....	83	16	49.3	6.89	<i>Wyoming.</i>				
Petersburg †.....	76	17	43.1	4.21	Camp Pilot Butte.....	59	-17	22.2	0.78
Richmond †.....	74	21	44.9	4.02	Camp Sheridan.....	40	-22	14.2	2.79
Salem.....	75	15	41.7	3.91	Fort D. A. Russell.....	54	-15	21.6	1.23
Stanardsville.....	75	15	41.7	3.91	Fort Fetterman.....	52	-25	20.1	0.28
Staunton.....	69	16	41.6	4.83	Fort McKinney.....	55	-23	17.8	0.25
Woodstock †.....	76	10	41.8	3.18	Fort Washakie.....	49	-29	18.1	0.08
Weytheville.....	76	10	41.8	3.18	Laramie.....	53	-11	22.8	0.38
Yancey's Mills.....	48	23	35.8	2.51	Lusk.....	47	-19	17.4	.....
<i>Washington.</i>					Saratoga.....	46	-18	20.6	0.92
Port Blakeley †.....	50	22	35.8	3.15	Wheatland.....	30	-20	15.8	0.70
Chehalis.....	44	22	34.4	1.70	<i>British Columbia.</i>				
Doe Bay †.....	45	20	33.4	1.75	Esquimalt.....	44	24	33.8	2.49
East Sound.....	49	28	39.6	7.20	New Westminster.....	46	12	30.9	3.39
Fort Canby.....	52	12	31.3	2.48	<i>Mexico.</i>				
Fort Simcoe *.....	42	-6	23.6	0.97	La Logia*.....	88	48	67.6	T.
Fort Spokane.....	45	21	33.7	2.31	Leon de Aldemas.....	81	42	59.8	1.00
Fort Townsend.....	49	5	30.4	3.27	Mazatlan.....	77	61	71.1	0.00
Fort Walla Walla.....	45	5	23.2	.....	Mexico.....	78	39	57.4	0.39
Lapush.....	45	24	35.1	2.36	Pueblo.....	82	37	60.8	.....
Seattle.....	47	33	37.0	3.68	Topolobampo*.....	75	57	67.0	0.00
Tacoma.....	49	30	36.0	4.37	Zacatecas.....	80	32	56.0	0.48
Vancouver B'ks.....	43	-6	17.6	1.25	<i>New Brunswick.</i>				
Waterville.....	43	-6	17.6	1.25	Saint John.....	42	-7	22.2	5.26
<i>West Virginia.</i>					<i>Sandwich Islands.</i>				
Buckhannon †.....	.....	.....	.....	5.87	Honolulu.....	80	54	69.0	5.15
Charleston †.....	.....	.....	.....	6.11	<i>West Indies.</i>				
Ellis*.....	65	8	37.7	6.12	Grand Turk Island.....	89	77	78.8	0.68
Glennville †.....	.....	.....	.....	5.67	Hamilton, Bermuda.....	74	54	65.8	4.50
Harper's Ferry †.....	.....	.....	.....	2.09	Havana.....	86	62	73.8	1.01
Hinton.....	.....	.....	.....	6.38					
Received too late for general discussion of weather for February, 1891.									
<i>Alabama.</i>					<i>Arkansas.</i>				
Childersburgh †.....	.....	.....	.....	11.69	Rogers †.....	75	9	40.2	2.20
Clairborne Landing †.....	.....	.....	.....	5.44	<i>Colorado.</i>				
Florence.....	.....	.....	.....	10.59	Alford †.....	.....	.....	.....	0.94
Tallassee Falls †.....	.....	.....	.....	10.38	Como (near) †.....	43	-18	13.1	1.08
Tucaloosa.....	.....	.....	.....	10.23	Cumbres †.....	43	-26	19.4	11.40
Warrior †.....	.....	.....	.....	6.49	Rifle Falls †.....	47	-11	23.6	2.68
<i>Arizona.</i>					Westcliffe †.....	53	-20	20.1	0.53
Dudleyville.....	.....	.....	.....	3.65	<i>Georgia.</i>				
Springville.....	.....	.....	.....	0.90	Rome.....	.....	.....	.....	7.09
Walnut Grove †.....	.....	.....	.....	1.13					

Reports received too late, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Indiana.</i>	o	o	o	<i>Ins.</i>	<i>New York—Cont'd.</i>	o	o	o	<i>Ins.</i>
Evansville.....	59	o	35.1	1.64	Factoryville *.....	58	o	30.7	2.88
Richmond.....	59	o	35.1	4.83	Heas Road Station†	53	7	29.7	3.65
<i>Ohio.</i>					Humphrey†.....	53	7	30.0	4.55
Eagle Grove *.....	-20	9.4	1.35		Jamestown *†.....	53	7	31.3	
<i>Kansas.</i>					Lyon Mountain (1).....	46	-15	19.2	
Grainfield.....	62	o	1.75	1.75	Marshall†.....	50	o	30.7	
Oakley.....	78	8	0.00	0.00	Middleburgh†.....	60	5	29.2	5.00
Pauline.....	69	o	30.0	1.20	North Hammond†.....	56	-4	26.1	3.04
Winona.....	72	o			Number Four†.....	46	-19	20.2	3.67
<i>Mass.</i>					Queensbury *†.....	40	-15	20.9	3.07
Kennebec Arsenal.....	40	-15	16.0	0.15	Rondout.....	49	o	28.7	4.11
<i>Mississippi.</i>					South Kortright†.....	54	-1	25.5	3.31
Columbus† (1).....				9.60	<i>North Dakota.</i>				
<i>Missouri.</i>					Ellendale†.....	41	-18	7.8	
Boonville.....				1.91	Grand Forks.....	33	-31	1.5	0.95
Lamont * (1).....	75	-4	29.6	2.42	<i>South Dakota.</i>				
<i>Nebraska.</i>					Brookings.....	48	-28	6.6	1.00†
Superior *.....	85†	-10	26.2	0.60	Scranton.....	44	-26	8.1	1.07
<i>New Mexico.</i>					<i>Texas.</i>				
Bernalillo.....				0.70	Austin (1).....	84	29	57.0	0.20
Chama.....	53	-20	23.2	7.10	Durham.....				0.00
Pojuaque.....				1.90	Forestburgh.....	80	15	48.2	0.41
<i>New York.</i>					Luling.....	84	30	58.1	1.90
Arkwright.....	51	10	30.31		San Angelo†.....	74d	18d	52.0d	0.09
Binghamton†.....	60	2	29.8	3.27	Santa Maria.....				0.79
Constableville†.....	47	-18	31.2	8.24	Snyder.....	24	34.2		T.
Dunkirk (1).....	56	11	32.6		<i>Virginia.</i>				
Elmira *†.....	60	7	31.7	2.19	Bedford City *†.....	18	41.2	4.55	

Received too late for publication in January, 1891.

<i>Arizona.</i>					<i>Montana.</i>				
Florence.....	69	23	45.4	1.17	Blackfoot Agency..	54	-17	30.6	0.20
<i>California.</i>					<i>Nebraska.</i>				
Boulder Creek *.....	80	22	45.1	2.46	Yount's Ranch.....	64	30	41.6	0.00
Dunnigan *.....	54	27	45.5	0.59	<i>New Mexico.</i>				
Indio *.....	87	32	59.6		Pojuaque.....				1.48
Keeler *.....	60	23	40.7		<i>North Carolina.</i>				
Mammoth Tank *.....	84	28	54.9		Murphy.....				6.60
Pleasanton *.....	57	25	45.5	0.40	<i>North Dakota.</i>				
<i>Colorado.</i>					Ellendale.....	48	-10	23.4	
Longmont.....	52	-14	21.9	1.90	<i>South Dakota.</i>				
<i>Florida.</i>					Brookings.....	52	-10	21.0	0.10
Tallahassee.....	700	24d	47.7d	2.20	<i>Texas.</i>				
<i>Georgia.</i>					Colorado.....	71	11	42.0	0.91
Woolley's Ford.....	62	24	38.5		Lampasas.....	70	24	46.3d	0.00
<i>Idaho.</i>					Merkel.....	20	35.9	1.25	
Lewiston.....	50	22	37.0	1.13	San Angelo†.....	68	24	45.8	1.55
<i>Iowa.</i>					Snyder.....	20	30.0	0.50	
Muscatine.....	50	3	24.5	1.75	<i>Utah.</i>				
<i>Michigan.</i>					Logan†.....	48	1	22.3	
Berrington Springs (1).....	56	12	31.0	2.17	<i>Virginia.</i>				
<i>Missouri.</i>					Bedford City.....	25	35.8		
Bethany.....	51	5	29.2	2.80					
Lamonte (2).....	10								

Letters of the alphabet denote the number of days missing from the record, thus: the letter c indicates three days missing, etc., etc.

*Extremes of temperature from observed readings. †Signal Service instruments. ‡One observation daily at 10 a. m. §120 inches of snow. ¶Precipitation mostly snow. Corrections: Sanger Junction, Cal., January, 1891, mean temperature should be 47.3, instead of 31.5; Malvern, Ark., January, 1891, page 17, should be Malvern (2); Gordonville, Mo., January, 1891, total precipitation should be 6.10; Seward, Nebr., January, 1891, total precipitation should be 2.70, instead of 4.05.

Precipitation (inches and hundredths) observed at Cincinnati, Ohio, by Prof. Ray, M. G. Williams, — Hurtt, G. W. Harper, C. Woodward, J. H. & R. C. Phillips, J. Lea, Prof. S. A. Norton, J. O. Manson, Signal Service observers, and others.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1835...	3.82	1.75	1.86	3.37	7.57	7.34	2.46	6.54	3.23	4.35	6.66	3.20	52.15
1836...	2.97	4.34	4.18	4.54	9.01	2.14	7.42	5.54	4.77	3.71	4.41	4.35	57.39
1837...	0.80	3.43	3.79	2.00	3.79	4.35	3.83	5.91	3.14	4.16	2.52	5.05	42.71
1838...	1.90	1.64	0.96	4.77	8.57	7.55	2.47	3.76	0.71	3.55	3.12	0.85	39.45
1839...	4.56	2.75	2.69	2.38	4.46	1.06	2.97	0.96	3.24	0.13	3.20	1.72	30.62
1840...	1.13	4.68	3.65	4.78	6.68	6.54	4.45	3.73	1.56	4.74	2.50	3.20	47.34
1841...	5.55	0.82	2.34	4.75	2.16	1.51	5.33	2.71	2.94	2.46	4.92	5.56	41.05
1842...	2.75	6.09	3.02	2.97	3.63	5.67	2.35	4.22	2.95	1.90	3.76	2.57	41.29
1843...	3.51	3.54	2.97	6.27	3.04	4.52	2.90	5.89	6.73	4.05	4.40	2.84	51.25
1844...	3.10	1.04	4.50	3.13	7.00	5.16	4.13	4.12	1.26	4.32	3.18	1.10	43.04
1845...	3.03	1.66	5.46	1.08	1.89	11.50	3.06	6.88	7.51	2.03	1.68	0.60	40.38
1846...	3.59	3.23	2.26	3.51	5.17	7.53	3.93	3.20	3.87	2.19	4.26	9.25	53.52
1847...	4.71	4.06	5.37	2.12	4.30	7.63	6.25	3.20	3.87	9.57	3.95	6.58	65.18
1848...	4.58	2.81	6.77	0.55	5.13	1.86	6.95	3.91	2.53	3.62	2.60	10.33	50.58
1849...	6.48	2.04	4.70	3.05	5.01	4.90	8.90	4.41	2.08	3.86	2.42	5.32	52.97
1850...	5.20	6.28	6.62	4.27	1.86	5.00	6.30	7.20	2.22	1.05	2.54	0.22	54.76
1851...	0.45	4.55	3.36	1.70	3.90	5.28	3.25	2.55	0.43	1.82	2.30	3.21	31.70
1852...	2.80	4.70	5.12	6.34	2.37	1.00	2.05	4.35	4.50	3.50	5.39	6.85	54.06
1853...	1.53	5.14	2.14	7.70	2.21	4.84	4.81	2.10	4.70	3.78	3.30	1.86	41.23
1854...	4.10	1.57	8.33	2.97	7.29	8.10	4.32	3.18	2.12	3.18	5.22	3.38	50.77
1855...	4.47	1.59	3.66	3.05	5.24	4.24	4.35	4.25	2.98	1.74	2.08	2.19	25.49
1856...	1.11	3.01	0.51	0.73	5.23	3.09	2.50	2.92	0.75	4.92	5.36	3.82	35.25
1857...	0.67	2.21	1.05	4.34	8.32	5.61	3.01	7.97	0.85	4.66	2.57	6.41	49.11
1858...	2.56	1.76	1.05	4.34	8.32	5.61	3.01	7.97	0.85	4.66	2.57	6.41	49.11

Precipitation observed at Cincinnati, Ohio—Continued.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1859...	2.94	6.17	4.64	7.58	2.27	3.14	1.95	3.34	2.24	1.33	4.99	4.52	45.11
1860...	2.50	1.99	0.56	5.02	3.68	1.55	7.97	0.91	4.34	1.27	3.53	1.85	35.17
1861...	3.67	1.65	2.65	3.83	6.00	3.78	4.74	6.89	2.63	3.72	3.65	0.66	43.08
1862...	4.52	2.15	5.86	3.62	3.52	2.84	3.14	1.32	1.07	0.79	3.92	3.36	38.14
1863...	5.55	3.85	4.28	2.27	2.30	2.43	3.28	3.07	3.12	3.77	2.14	3.71	39.77
1864...	1.94	1.08	0.96	2.43	2.34	2.97	1.25	3.20	7.81	2.76	3.35	3.20	33.32
1865...	2.28	2.52	4.15	3.79	8.09	2.24	7.89	2.26	5.54	0.80	0.36	4.06	43.98
1866...	3.06	1.18	5.14	3.20	0.96	3.63	7.31	8.05	10.88	3.15	2.34	1.90	49.86
1867...	1.34	4.44	2.37	2.96	3.80	0.69	1.99	1.20	0.56	2.05	2.43	3.73	30.15
1868...	5.50	0.57	5.14	3.01	6.05	0.43	1.21	5.63	7.70	1.16	1.34	1.73	45.47
1869...	2.08	2.92	5.35	2.41	4.01	4.02	4.94	1.33	2.87	2.48	3.55	3.22	39.18
1870...	6.04	2.20	4.20	1.44	1.82	4.61	2.79	0.83	0.50	2.89	1.70	2.20	31.28
1871...	1.16	2.27	3.00	1.62	1.02	1.69	2.78	6.05	1.23	1.80	4.18	3.27	30.07
1872...	0.60	1.67	1.57	5.14	4.07	3.81	7.01	2.21	1.62	3.33	1.22	2.43	34.68
1873...	2.66	3.76	2.36	2.89	3.50	3.58	3.94	4.69	2.24	2.79	2.50	6.47	41.38
1874...	3.95	5.91	3.65	4.06	1.38	2.58	3.42	1.03	2.32	1.31	5.35	2.58	37.55
1875...	1.59	1.83	3.69	2.12	3.92	4.83	0.43	3.17	0.65	3.05	4.35	3.75	42.58
1876...	9.49	2.92	5.07	3.26	1.25	6.67	6.91	0.38	3.17	4.20	2.36	0.88	52.62
1877...	2.33	0.67	5.47	2.32	1.70	5.24	2.25	2.26	1.66	1.85	3.49	3.35	34.65
1878...	4.33	2.23	4.03	3.05	2.53	5.03	4.32	4.11	2.84	2.39	2.77	3.89	41.62
1879...	2.20	2.22	5.30	2.14	4.23	5.22	2.75	11.72	4.01	0.65	4.05	4.71	51.60
1880...	5.14	4.50	4.15	5.82	5.70	9.68	2.40	4.01	1.37	2.98	4.42	4.26	54.49
1881...	3.76	4.95	5.51	3.25	2.23	7.82	3.12	0.76	2.10	6.01	4.06	5.67	47.24
1882...	6.02	7.04	7.17	2.71	8.47	4.34	3.91	5.75	3.16	1.59	1.57	2.39	52.12
1883...	2.82	8.23	3.48	3.72	5.49	3.61	3.21	2.10	1.83	8.39	4.87	5.61	52.35
1884...	2.21	8.87	2.63	3.02	5.56	2.77	1.73	2.05	3.87	1.35	1.23	3.99	39.28
1885...	0.80	3.67	0.50	3.34	2.07	3.98	1.40	4.95	2.72	2.30	2.33	1.82	33.94
1886...	2.83	1.65	2.27	2.23	4.11	5.26	3.07	2.91	1.30	0.82	3.23	1.67	31.35
1887...	2.37	7.29	2.07	5.86	3.62	2.64	1.31	2.81	1.93	0.55	2.83	1.80	35.08
1888...	2.78	1.37	3.94	1.14	2.70	1.75	2.46	7.80	1.79	3.05	4.78	1.32	34.88
1889...	2.38	1.72	0.61	1.21	2.52	4.03	4.55	0.26	4.31	2.03	5.28	2.02	30.92
1890...	5.28	4.63	6.22	2.63	3.58	6.00	1.46	5.91	3.28	4.14	2.65	1.88	47.70
Mean..	3.32	3.35	3.60	3.36	4.07	4.53	3.95	3.95	3.00	2.89	3.34	3.63	42.99

Table of miscellaneous meteorological data for February, 1891—Signal Service observations.

Stations and districts.	Elevation above sea level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.										Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind.			Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths.			Mean temperature data since opening of station.			
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.	Total movement, miles.	Prevailing direction.					Maximum velocity.		Length of record, years.					Highest for month.	Year.	Lowest for month.	Year.			
																			Miles per hour.	Direction.										Date.	Direction.	Year.
New England.																																
Eastport	53	29.94	30.00	1.50	22.8	+2.9	45	29.6	-8	15.9	31	1	17.0	76.2	3.13	0.99	8,243	nw.	33	ne.	7	8	4	16	16.5	6.6	3	27.5	1877	16.7	1875	
Portland	99	29.92	30.03	1.42	25.3	+1.6	51	33.1	-4	17.5	27	2	19.0	77.3	4.31	0.68	6,095	nw.	25	nw.	28	8	9	11	15.6	3.4	20	31.8	1877	19.2	1875	
Manchester	247	29.78	30.05	1.34	27.0	...	56	35.8	-7	18.2	30	5	18.8	74.8	3.26	0.51	4,155	nw.	25	nw.	14	6	13	9	14.6	3.1	4	28.2	1890	20.7	1889	
Northfield	872	29.66	30.05	1.22	20.9	...	51	30.4	-17	11.4	44	4	14.8	75.7	2.13	...	8,343	nw.	40	s.	9	4	11	13	13.7	3.6	1	22.2	1890	11.6	1889	
Boston	125	29.93	30.07	1.38	32.0	+4.2	62	39.5	2	24.4	39	8	25.5	80.4	5.29	+1.63	9,215	w.	41	w.	22	8	9	11	15.6	3.4	8	33.2	1890	20.5	1885	
Nantucket	14	30.06	30.08	1.43	33.8	...	51	39.4	10	28.1	23	4	29.3	81.4	3.30	...	9,330	nw.	40	nw.	4	7	7	14	16.6	3.4	5	35.6	1890	27.9	1885	
Wood's Holl	22	...	...	...	33.2	...	52	39.5	9	26.8	26	4	...	...	6.26	+3.81	12,813	nw.	56	nw.	4	6	10	12	14	...	5	33.7	1880	24.1	1875
Vineyard Haven	...	...	...	...	35.1	...	58	44.8	10	25.4	36	6	...	...	3.79	...	...	nw.	...	...	10	15	13	16	...	...	3	38.4	1890	29.9	1889
Block Island	27	30.06	30.09	1.44	34.9	+3.4	52	40.9	12	26.9	24	6	29.7	82.2	3.97	+0.83	12,961	nw.	33	e.	7	7	10	11	17.5	5.3	11	37.2	1890	24.2	1885	
Narragansett Pier	22	...	...	...	34.5	+5.4	54	44.1	6	24.9	42	8	...	...	6.78	+1.51	...	sw.	...	...	6	12	10	18	...	...	3	35.5	1890	26.8	1889
New Haven	107	29.96	30.08	1.36	32.3	+3.8	54	39.1	8	25.5	26	4	25.2	78.6	5.88	+1.67	6,108	n.	33	s.	28	7	9	12	17.6	5.5	19	35.6	1877	19.7	1885	
New London	47	30.02	30.07	1.40	32.4	+1.9	53	39.5	7	25.3	29	3	25.6	77.0	6.46	+2.46	5,558	nw.	36	s.	28	8	7	13	16.6	5.3	21	30.8	1890	23.7	1885	
Mid. Atlantic States.																																
Albany	85	29.98	30.08	1.31	28.2	+2.0	54	35.2	-5	21.3	37	3	23.2	82.5	4.14	+1.59	5,971	nw.	30	se.	3	2	13	13	17.6	5.0	18	33.0	1884	14.7	1885	
New York City	185	29.89	30.09	1.29	37.5	+5.3	61	44.2	13	30.8	28	4	29.5	77.4	4.69	+0.93	8,351	nw.	38	sw.	28	5	10	13	16.6	5.6	21	40.4	1890	23.1	1885	
Harrisburg	377	29.69	30.11	1.17	30.6	...	65	43.4	14	29.9	24	5	28.0	72.2	3.31	+0.54	6,307	nw.	42	nw.	27	6	7	15	14.7	5.9	3	37.6	1890	25.2	1889	
Philadelphia	117	29.98	30.11	1.23	39.6	+4.4	69	46.8	15	32.4	29	4	39.8	73.2	4.71	+1.48	8,481	nw.	36	sw.	28	8	6	14	15.6	5.9	21	41.4	1890	23.4	1885	
Atlantic City	53	30.06	30.11	1.26	38.7	+4.7	68	44.9	14	32.5	24	2	33.0	81.2	5.89	+2.56	8,585	nw.	38	nw.	4	11	6	11	17.4	5.4	18	41.2	1890	23.7	1885	
New Brunswick	...	...	...	...	39.9	...	66	45.8	10	28.0	33	6	...	...	4.07	...	...	nw.	...	...	...	...	...	...	...	...	...	...	...	...	...
Baltimore	76	30.03	30.12	1.18	41.4	+4.4	73	48.3	16	34.6	27	5	31.4	71.8	5.52	+1.98	4,385	nw.	26	s.	28	8	10	10	16.6	5.4	21	43.4	1890	28.5	1885	
Washington City	112	30.00	30.12	1.16	41.4	+5.3	74	48.6	16	34.3	28	4	32.0	74.4	4.49	+1.18	5,835	s.	36	nw.	3	8	7	13	15.7	5.9	21	43.4	1890	26.9	1885	
Cape Henry	...	...	...	...	48.9	+5.7	77	58.2	25	39.6	34	6	...	...	4.82	+1.29	...	*	...	...	...	...	...	...	...	...	...	...	...	...	...
Lynchburg	685	29.39	30.15	1.14	43.6	+2.7	74	51.1	17	36.1	29	2	33.0	71.6	5.59	+2.10	3,390	nw.	28	nw.	26	5	10	13	16.7	6.6	21	47.2	1890	31.6	1885	
Norfolk	43	30.09	30.13	1.19	49.0	+5.1	78	57.1	24	40.8	30	5	42.7	81.5	5.10	+1.42	7,338	ne.	48	nw.	26	5	8	15	16.6	6.6	5	52.4	1890	37.2	1885	
S. Atlantic States.																																
Charlotte	808	29.27	30.14	1.17	49.0	+3.1	78	57.1	23	41.0	33	6	40.3	79.1	6.95	+2.57	4,115	s.	26	w.	3	9	3	16	15.6	6.0	13	52.8	1890	38.5	1885	
Hatteras	11	30.16	30.18	1.19	53.2	+5.5	71	59.3	33	47.1	22	4	50.4	89.9	3.43	+0.07	11,133	ne.	45	n.	22	2	10	16	19.7	1.6	11	56.4	1890	41.2	1885	
Kitty Hawk	...	...	...	...	52.3	+6.8	76	60.6	30	44.0	31	6	44.0	81.2	3.92	+1.13	11,545	sw.	40	nw.	22	4	11	13	16.6	6.0	15	53.2	1890	37.7	1875
Raleigh	388	29.72	30.15	1.12	48.9	+3.5	77	57.0	21	40.8	29	6	40.4	75.8	5.10	...	4,796	sw.	35	n.	21	3	3	23	17.7	0.8	5	52.7	1890	38.2	1889	
Southport	...	...	...	...	53.8	+4.5	68	60.7	30	47.0	25	4	...	...	1.87	+1.18	7,615	*	36	*	21	4	10	14	11	...	10	58.2	1890	42.5	1885
Wilmington	78	30.08	30.17	1.10	55.8	+5.1	80	64.2	30	47.5	27	5	49.0	84.6	1.54	+1.79	7,206	sw.	45	sw.	21	3	11	15	14.6	4.5	21	58.4	1890	44.4	*	
Charleston	52	30.10	30.15	0.99	58.4	+4.7	80	65.8	29	51.1	25	5	54.4	92.8	0.99	+2.47	7,910	sw.	45	w.	26	3	12	13	12.6	5.1	21	60.6	1890	47.4	1889	
Columbia	...	...	...	...	54.4	...	79	63.7	25	45.2	32	7	...	...	3.70	...	...	ne.	...	...	...	...	...	...	...	...	...	...	...	...	...
Augusta	183	29.97	30.16	1.06	56.6	+4.6	82	65.0	26	48.2	27	5	47.3	78.8	3.71	+0.08	3,259	ne.	26	w.	26	2	13	13	13.6	1.7	4	57.6	1890	44.0	1889	
Savannah	87	30.07	30.17	0.93	60.6	+4.8	84	68.9	28	52.2	28	5	52.2	85.4	2.23	+0.85	5,912	sw.	33	ne.	14	5	14	9	12.6	1.6	21	61.2	1890	48.0	1889	
Jacksonville	43	30.10	30.15	0.84	65.6	+5.8	86	74.4	31	56.9	38	4	55.5	79.1	0.32	+2.85	5,801	s.	36	w.	26	3	16	9	6.4	6.3	20	65.6	1891	52.4	1889	
Florida Peninsula.																																
Jupiter	28	30.11	30.14	0.48	71.6	...	82	77.1	45	66.0	20	5	66.2	84.8	2.47	...	7,852	s.	36	s.	21	11	7	10	11.4	5.2	4	71.6	1891	64.8	1889	
Key West	22	30.10	30.12	0.40	73.2	+1.4	81	77.2	58	69.2	12	4	66.3	80.4	0.74	+0.99	7,417	se.	44	nw.	22	12	15	1	4.4	5.1	21	75.0	1883	66.0	1886	
Mico g	...	...	...	...	69.6	...	87	77.9	38	61.3	24	5	...	...	1.13	...	...	se.	...	...	...	...	...	...	...	...	...	...	...	...	...
Tampa	36	30.11	30.15	0.63	69.0	...	86	78.0	38	60.1	30	7	62.4	87.7	0.95	+1.93	4,350	ne.	42	nw.	26	5	10	7	6.7	2.6	...	...	...	...	...
Titusville	44	30.11	30.15	0.64	68.6	...	85	75.7	37	61.5	24	3	62.6	87.8	1.85	...	9,103	se.	42	e.	15	10	8	13	4.0	3.3	4	68.6	1891	57.0	1889	
Eastern Gulf States.																																
Atlanta	1,139	28.92	30.13	0.88	59.0	+3.6	74	58.0	20	42.9	30	5	44.0	84.6	8.50	+																

Table of miscellaneous meteorological data for February, 1891—Signal Service observations—Continued.

Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.								Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal precipitation.	Wind.				Total movement, miles.	Prevailing direction.	Maximum velocity.			Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Mean temperature data since opening of station.			
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.					Miles per hour.	Direction.	Date.	8 a. m.			8 p. m.	Length of record, years.	Highest for month.					Year.	Lowest for month.	Year.	
<i>Extreme Northwest.</i>																																	
Moorhead	935	28.95	30.07	0.97	2.1	-2.8	37	12.7	-35	-8.5	42	7	1.8	86.8	1.36	0.33	7,200	N.W.	36	se.	4	14	7	7	12	5.1	3.2	11	16.9	1882	-	3.9	1884
Saint Vincent	804	29.13	30.06	1.10	2.6	-2.0	31	8.1	-34	-13.4	46	7	2.0	86.8	1.60	1.60	4,668	N.	35	n.	4	10	12	7	9	4.5	3.2	11	8.7	1881	-	9.0	1884
Bismarck	1,681	28.14	30.06	0.84	6.4	-2.7	48	18.2	-23	-5.3	54	4	2.0	86.8	0.57	0.08	7,098	N.W.	48	n.w.	24	17	3	1	17	5.5	3.7	17	26.6	1877	-	4.8	1875
Fort Buford	1,900	27.91	30.07	0.90	2.0	-6.9	39	13.2	-34	-9.1	43	6	2.4	86.8	0.29	0.29	5,679	N.W.	40	n.w.	20	6	13	3	17	5.5	3.7	17	21.4	1882	-	5.0	1887
Fort Yates					2.7	-0.3	47	21.8	-20	-3.4	50	6	1.2	86.8	0.61	0.61		N.W.				6	14	9	9	6.0	5.4	5	20.4	1886	-	0.0	1887
<i>Upper Miss. Valley.</i>																																	
Minneapolis					13.4		45	24.4	-22	2.3	34	8			1.07							10	12	6	11								
Red Wing	758	29.16	30.05	1.21	11.8		46	22.2	-28	1.5	39	5	5.0	77.2	1.06		6,760	W.	46	W.	24	12	7	9	11	4.5	4.0						
Saint Paul	831	29.06	30.01	1.19	11.2	-4.2	44	20.7	-25	1.6	38	6	5.0	78.6	1.18	0.28	5,159	N.W.	25	N.W.	3	9	11	8	11	3.3	3.6	21	31.8	1877	-	2.1	1875
La Crosse	736	29.21	30.04	1.20	17.2	-1.4	50	26.3	-24	5.0	39	3	9.4	75.3	1.33	0.27	4,097	N.W.	26	W.	25	11	12	5	11	4.6	2.9	20	37.3	1878	-	6.3	1875
Davenport	613	29.37	30.07	1.14	26.4	-1.8	66	34.5	-8	18.2	36	8	17.8	75.3	0.89	0.78	7,548	N.W.	42	N.W.	3	11	7	10	12	3.9	2.4	20	40.3	1882	-	10.1	1875
Des Moines	869	29.08	30.04	1.32	23.2	-0.4	55	32.7	-10	13.7	40	8	15.2	78.6	1.13	0.20	6,751	N.W.	36	W.	3	14	6	8	10	4.4	3.8	13	36.0	1882	-	14.6	1885
Dubuque	651	29.30	30.04	1.16	23.1	-0.8	61	31.8	-13	14.4	34	4	15.5	77.8	0.98	0.61	4,470	N.W.	25	N.W.	25	11	8	9	9	6.3	2.4	20	39.5	1882	-	16.5	1885
Keokuk	613	29.37	30.07	1.18	29.1	-1.0	70	38.5	-6	19.7	36	4	21.4	79.2	1.32	0.51	5,471	N.W.	36	N.W.	3	14	5	9	6	3.2	2.4	20	49.0	1882	-	31.9	1885
Cairo	359	29.69	30.08	0.99	41.7	-2.4	69	48.4	-16	35.0	32	2	33.7	76.2	3.20	0.98	7,235	se.	36	N.W.	24	9	9	10	13	7.2	4.8	20	49.0	1882	-	31.9	1885
Springfield, Ill.	644	29.34	30.05	1.14	31.4	-0.2	67	39.8	-5	29.9	28	5	33.0	75.0	2.59	1.15	7,454	N.W.	36	N.	24	9	16	11	10	5.6	5.6	12	42.2	1882	-	20.9	1885
Saint Louis	571	29.43	30.06	1.11	35.9	-0.8	69	43.9	-4	27.9	31	5	27.5	75.1	2.95	0.05	9,145	N.W.	44	W.	24	12	6	10	12	5.4	4.5	21	43.9	1882	-	26.0	1875
<i>Missouri Valley.</i>																																	
Columbia					34.6		75	47.7	-2	21.4	41	10			2.63		6,363	N.W.	44	N.	24	10	5	13	6	4.4	4.3	2	37.6	1890	-	34.6	1891
Kansas City	963	28.99	30.08	1.13	30.2	-1.9	69	40.2	-4	20.2	45	4	20.6	73.8	2.08	0.40	6,609	N.W.	32	se.	24	11	11	6	10	4.1	2.2	3	34.0	1890	-	38.5	1889
Springfield, Mo.	1,356	28.59	30.08	0.90	35.7	-1.2	73	45.7	-6	25.7	37	6	25.6	75.2	2.30		6,721	se.	36	se.	23	11	7	7	10	5.8	4.7	2	45.2	1882	-	32.6	1890
Leavenworth	842	29.15	30.07	1.18	29.8	-0.7	67	40.1	-2	19.5	44	7	20.2	75.0	1.39	0.10	5,126	N.	25	N.	24	7	10	11	6	4.2	3.8	20	40.2	1882	-	20.5	1875
Topeka					29.8		64	42.2	-1	17.5	42	6			1.91			N.				7	18	3	5	5.5	5.1	21	37.3	1877	-	13.4	1875
Omaha	1,113	28.83	30.07	1.21	19.7	-4.4	53	28.9	-9	10.5	48	6	13.6	77.8	1.04	0.26	5,723	N.W.	36	N.W.	24	15	4	9	10	4.5	4.9	4	27.3	1888	-	21.6	1891
Crete					21.6		36	33.2	-12	9.9	46	10			0.89			N.W.				12	9	7	9	4.4	2.5	6	27.7	1888	-	12.6	1891
Valentine	2,613	27.18	30.12	0.80	12.6	-10.3	45	24.6	-18	0.6	40	6	4.6	76.2	1.55	1.04	5,768	N.W.	54	N.W.	24	13	10	8	10	3.3	2.1	2	22.9	1890	-	13.4	1891
Sioux City	1,158	28.74	30.09	1.13	13.4		45	23.0	-17	3.9	42	6	7.6	82.2	1.26		5,373	N.W.	42	N.W.	8	10	10	8	11	5.4	4.2	11	33.4	1877	-	2.2	1887
Fort Sully	1,600	28.26	30.06	0.74	8.6	-6.3	44	17.8	-10	-0.7	46	4	3.8	84.2	0.78	0.49	5,373	N.W.	52	N.W.	8	10	10	8	11	5.4	4.2	11	33.4	1877	-	2.2	1887
Huron	1,307	28.56	30.05	0.84	6.9	-6.2	46	17.6	-22	-3.8	43	5	4.8	80.8	1.32	0.53	7,869	N.W.	48	N.	8	10	11	7	8	4.4	3.7	10	24.7	1882	-	3.6	1887
Yankton	1,232	28.65	30.08	0.98	11.1	-11.2	42	21.6	-19	1.4	40	4	5.8	81.2	0.86	0.13	6,563	N.W.	46	N.W.	8	13	7	8	10	4.4	3.9	18	33.7	1877	-	2.5	1875
<i>Northern Slope.</i>																																	
Fort Assiniboine	2,690	27.04	30.03	0.92	0.0	-14.9	36	9.1	-34	-1.9	42	4	-3.0	83.0	0.11	0.52	6,455	N.W.	48	N.W.	4	3	8	17	6	5.7	7.2	11	30.3	1886	-	2.6	1887
Fort Custer	3,040	26.70	30.03	0.91	6.7	-14.2	40	17.3	-36	-3.9	46	4	-3.4	96.2	0.35	0.11	4,423	se.	27	N.W.	7	9	8	11	7	3.2	2.9	11	30.2	1886	-	2.4	1887
Helena	4,069	25.66	30.02	0.89	6.6	-15.8	45	14.2	-24	-1.0	37	2	-0.4	76.9	0.87	1.02	3,245	N.W.	27	N.W.	7	3	9	16	10	5.6	7.9	11	35.0	1888	-	5.0	1887
Rapid City	3,280	26.48	30.09	0.76	12.4		55	33.3	-22	1.6	45	2	3.0	72.4	0.89	0.59	8,971	N.	42	N.W.	7	8	13	8	13	5.5	5.1	4	28.5	1888	-	12.4	1891
Cheyenne	6,105	23.74	29.88	0.70	23.4	-4.0	52	34.0	-7	12.7	43	10	10.4	61.0	0.89	0.59	8,971	N.	46	N.W.	24	10	10	8	10	5.3	5.0	20	33.4	1886	-	18.9	1883
Fort McKinney	5,000	24.79	30.07	0.90	16.0		54	28.9	-25	3.2	44	10	6.6	65.4	0.05		5,447	N.	65	N.	7	11	6	11	2	4.5	4.4	4	31.5	1888	-	23.0	1890
Fort Washakie	5,580	24.20	29.95	0.89	17.0		48	29.1	-28	4.9	39	10	6.6	65.4	0.18	0.15	5,447	N.W.	39	N.W.	22	11	14	3	5	5.8	4.6	5	31.3	1888	-	1.0	1883
North Platte	2,841	26.98	30.06	0.86	19.0	-7.1	61	31.5	-14	6.6	42	4	8.8	73.1	0.27	0.40	6,595	N.W.	48	N.W.	8	11	8	9	10	4.4	3.9	18	33.7	1877	-	16.8	1883
<i>Middle Slope.</i>																																	
Denver	5,281	24.56	29.94	0.72	26.8	-6.2	61	39.8	-6	13.8	50	6	8.8	51.7	0.27	0.22																	

Chart I. Tracks of A

Form Map G-1691.

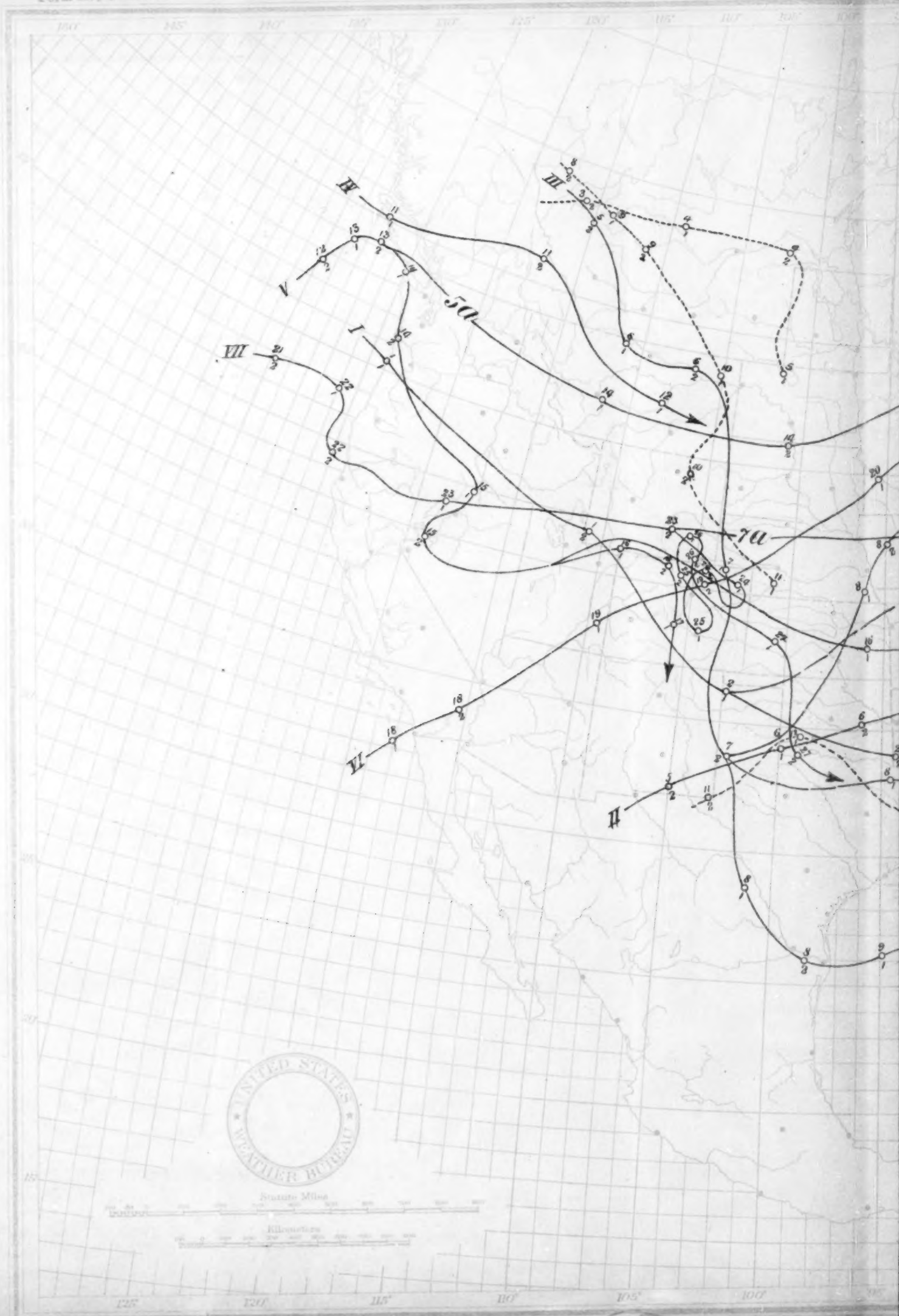
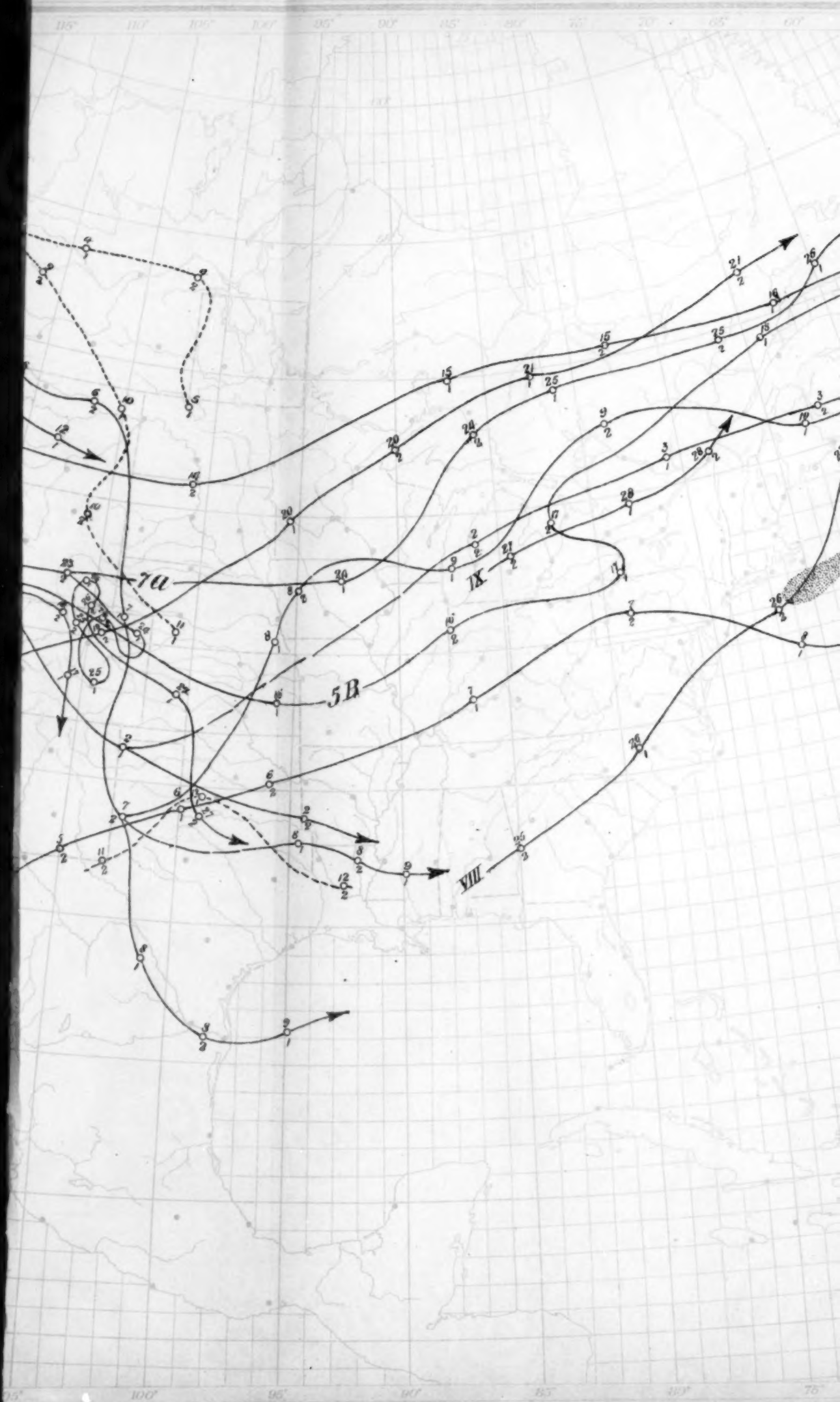


Chart I. Tracks of Areas of Low Pressure. February, 1891.





NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.

The dotted shading () indicates fog belts.

The ruled shading () indicates the position in which field-ice or icebergs were observed.



Chart II. Isobars, Isotherms, and Winds. February, 1891.

March 10th '91

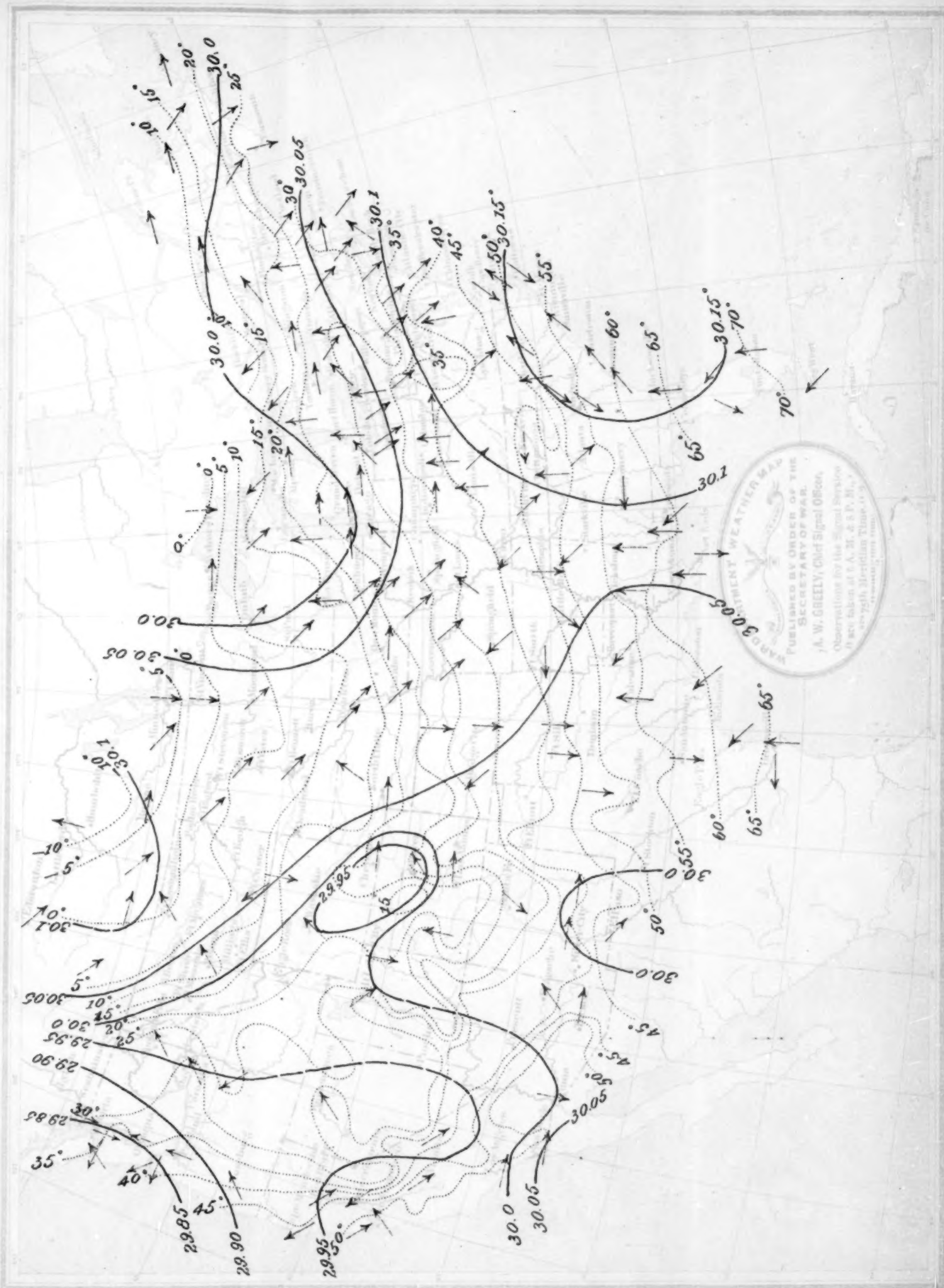


Chart III. Precipitation, February, 1891.





Chart V. Depth of Snowfall (inches). February, 1891.

